DECEMBER 12, 1942

Railway Age

Founded in 1856

The Season's Greetings
To Our Friends
in the Railway Industry

McCARTNEY LIBRARY
GENEVA COLLEGE

YOUNGSTOWN STEEL DOOR COMPANY

Cleveland Chicago New York Youngstown

The Season's Greetings

To All Railroad Men . . .

. . . men who never before have produced so much transportation . . . under so much pressure.

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS

230 PARK AVENUE,
NEW YORK, N. Y.

445 N. SACRAMENTO BLVD.,
CHICAGO, ILL.

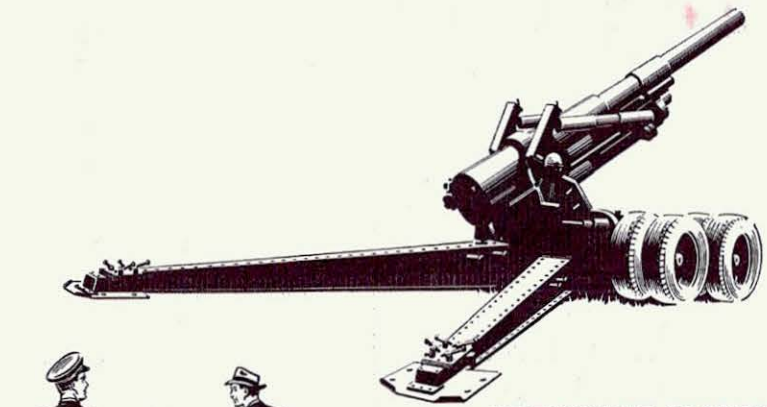
AMCCW

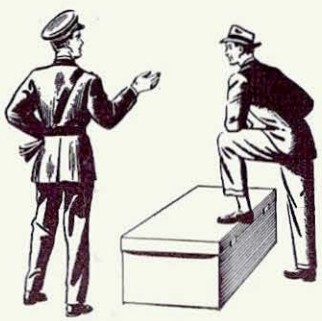
ORGANIZED TO ACHIEVE:
Uniform Specifications
Uniform Inspection
Uniform Product

3186

Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription price $6.00 for one year U. S. and Canada. Single copies, 25 cents each. Vol. 113, No. 24.

"WHY USE MAYARI R FOR GUN MOUNTS?"





"BECAUSE MAYARI R's high yield point provides a gun mount that has the necessary strength with a saving in steel and in weight. This makes the mount more maneuverable. Besides, Mayari R has high resistance to impact and to corrosion. And it doesn't need heat-treatment after welding."

Not so long ago large tonnages of Mayari R, Bethlehem's low-alloy, high-strength steel, were being used in railway cars, trucks, busses, coal grab buckets, and other movable equipment. But since then Mayari R has been drafted for the duration. Right now it is going into planes, tanks, anti-aircraft guns, heavy-duty trailers, ammunition trays, and many other types of equipment for our armed forces.

But when the victory has been won Mayari R will of course again be available for peace-time uses. And continuing research and the wealth of application experience now being gathered will result in Mayari R being even more useful and efficient in helping you to build better, more competitive products in the days ahead.

Physical properties of Mayari R in brief:

Ultimate tensile strength, p.s.i. minimum	70,000
Yield point, p.s.i. minimum	50,000
Elongation in 2 in. per cent minimum	22
Endurance limit, p.s.i.	50,000
Endurance ratio	0.70
Modulus of elasticity	28-30,000,000

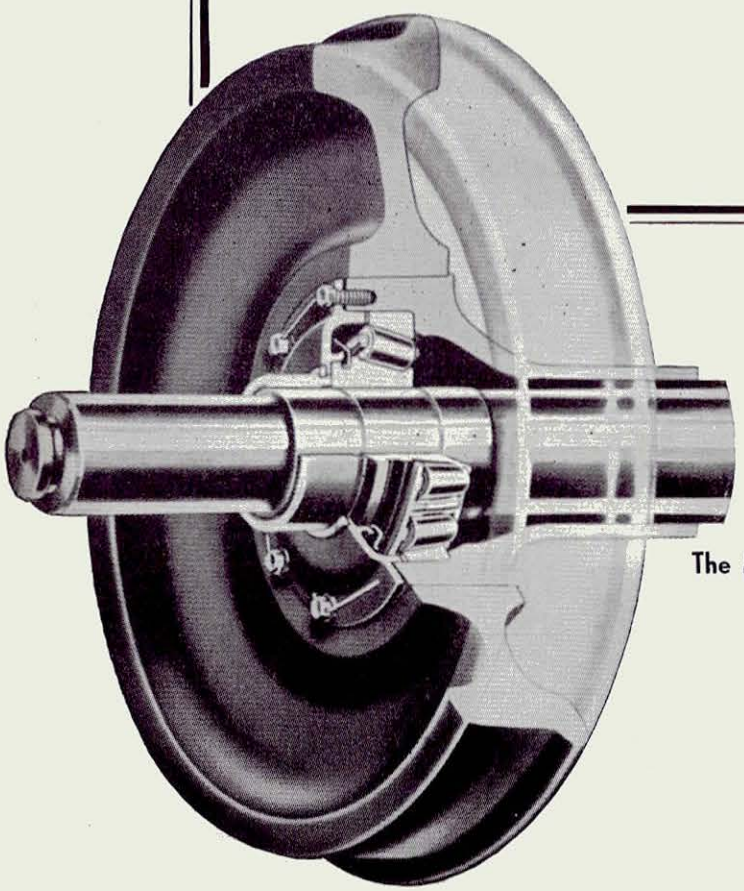
BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

Railroading for

THESE RAILROADS HAVE EITHER OR BOTH SKF OR SKF-ASF APPLICATIONS IN SERVICE:

Atchison, Topeka & Santa Fe
Atlantic Coast Line
Baltimore & Ohio
Boston & Maine
Chicago & North Western
Chicago, Burlington & Quincy
Chicago Great Western
Chicago, Milwaukee, St. Paul & Pacific
Chicago, Rock Island & Pacific
Central of Vermont
Delaware & Hudson
Denver & Rio Grande Western
Delaware, Lackawanna & Western
Duluth, Missabe & Iron Range
Great Northern
Illinois Central
Kansas City Southern
Louisville & Nashville
Lehigh Valley
Minneapolis, St. Paul & Sault Ste. Marie
Maine Central
Missouri Pacific
New York Central
New York, Chicago & St. Louis
New York, New Haven & Hartford
Norfolk & Western
Norfolk—Southern
Northern Pacific
Pere Marquette
Pennsylvania
Pullman
Richmond, Fredericksburg & Potomac
St. Louis—San Francisco
Seaboard Air Line
St. Louis Southwestern
Southern Pacific
Union Pacific
Wabash
Western Maryland
Western Pacific



The SKF-ASF Roller Bearing Unit

AMERICAN VICTORY

Maximum dependability of equipment was never so important as NOW when the war effort requires practically all rolling stock in constant service.

SKF Bearings fit into this picture, for their long life and dependability have been proved in railroad work during the last 20 years.

We are now prepared to furnish the SKF-ASF unit for railroads desiring to duplicate previous applications or that prefer this narrow pedestal design of roller bearing installation.

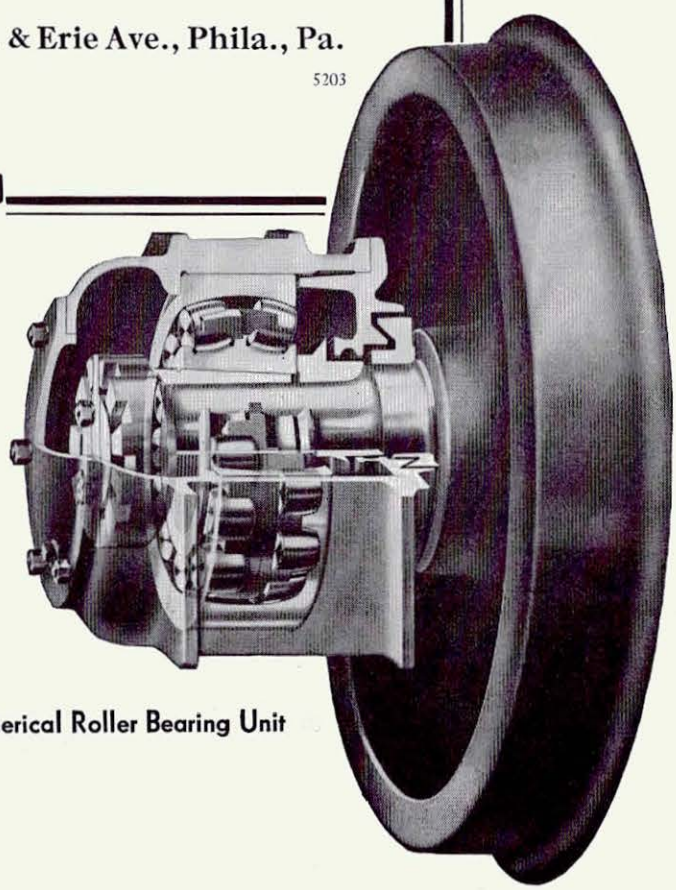
We would appreciate the opportunity to offer our recommendations for either the SKF or the SKF-ASF designs whenever new equipment is considered.

SKF INDUSTRIES, INC., Front St. & Erie Ave., Phila., Pa.

5203

SKF

ROLLER BEARINGS



The SKF Spherical Roller Bearing Unit

Keep 'em Rolling Faster!

YOU'LL HAVE FEWER STOPS FOR ICING WHEN YOUR CARS ARE INSULATED WITH

HAIRINSUL

★ ALL HAIR INSULATION FOR REFRIGERATOR CARS ★

● War can't wait for freight slowed up by too many icing stops. But when cars are lined with HAIRINSUL . . . ice lasts longer, freight moves faster and icing costs go down. So it's not only a patriotic duty but better business, as well, to insulate ALL your refrigerator cars with time-saving, ice-saving, longer-lasting HAIRINSUL.

When you rebuild your refrigerator cars, line them with HAIRINSUL . . . to get most service from your present equipment . . . to get most cooling efficiency from every pound of ice. HAIRINSUL *never* wears out, *never* deteriorates, *never* loses its protective properties—you can use it again when the car gets too old for service. It's a thick, flexible blanket so you can curve it, flange it, fit it to any surface. Resists fire, isn't affected by moisture. And its thermal conductivity is only .27 BTU's!

NO PRIORITIES REQUIRED FOR HAIRINSUL—AVAILABLE FOR IMMEDIATE DELIVERY

Send for samples of various weights and thicknesses and full engineering data.

AMERICAN HAIR & FELT COMPANY
MERCHANDISE MART • CHICAGO

BOMBS FROM THE SHOP BOYS

Right after Pearl Harbor a group of shop men in Cleveland were working fast to turn more motive power, to haul more troop trains, to win a war for our surprised and shocked country. Electricians C. D. Tilden and Fred M. Lee were pulling wire, while Pipefitters R. E. Bullock and S. C. Blood were bending a new length of pipe in a locomotive cab, when Tilden suddenly demanded: "What else can we do?"

Lee promptly replied: "Let's buy Uncle Sam a bomber!"

Bullock chimed in with: "How about a subscription list."

Blood added: "Let's make it five bucks apiece."

Within an hour eighteen machinists, engineers, boilermakers, and other hard workers had added their "John Henrys" to a hastily prepared paper—which was one swell way to express their feelings.

News about this modest piece of paper was flashed the length of a huge railroad system. Employees in all branches requested an official payroll deduction to buy the first bomber ever to carry a railroad message on its nose.

Among more than 130,000 employees of the railroad system who chipped in for that bomber was Draftsman Russell M. Church. His son—Lieutenant Russell M. Church, Jr., an Army air pilot—had died December 16th during an attack on a Japanese air base at Luzon, the Philippines.

At a gathering of men and women in a New York railroad terminal, attended by Colonel A. Robert Ginsburgh—aide to the Undersecretary of War—and former Postmaster General Jim Farley, Electrician Tilden explained the shop boys' plan to buy a bomber, and Draftsman Church presented the railroaders' check for $170,062.06 to Colonel Ginsburgh.

On August 31, at Middle River, Maryland, Railroad President F. E. Williamson and Railroad Shop Electrician Tilden formally presented the Martin B-26 medium bomber to the Army. Major J. B. Logle, of the staff of Lieutenant General H. H. Arnold, commanding officer of the Army Air Forces, formally accepted it.

This bomber is already on the job. The Japs that are hit by it may never know that it carries an invisible waybill reading: "Gift of the employees of one of America's railroads."

This very special message is just another version of our national slogan, "Keep 'em rolling!" But this particular bomber has a peculiar significance. It headlights a special wartime participation by workers in a major American industry.

These and more than a million other American railroaders, incidentally, are also manufacturing much war material. As a matter of course they are buying War Savings Bonds. And they have taken out of their pockets money to pay for material they do not make themselves.

—*The Trackwalker*

AMERICAN LOCOMOTIVE • GENERAL ELECTRIC

114-40-9500

MISSOURI PACIFIC LINES

"The time to prevent a failure is before it occurs"

Mr. L. W. Baldwin, Chief Executive Officer, Missouri Pacific Lines

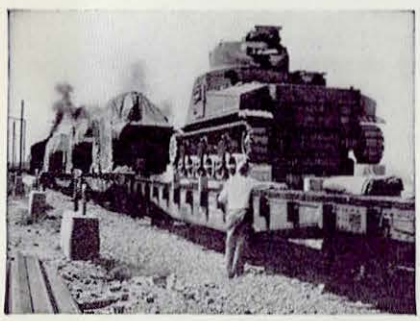


PHOTO U. S. ARMY SIGNAL CORPS

Today, the Missouri Pacific is moving the greatest volume of freight in its history; is handling the largest amount of passenger traffic in many years; is making a definite contribution to Victory.

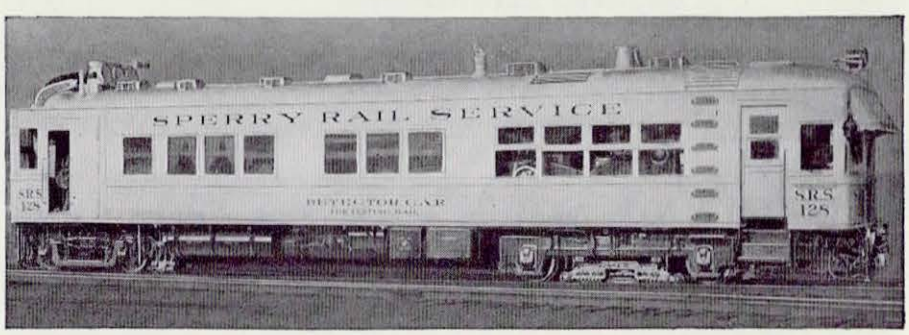
★

TO MAINTAIN MAXIMUM RAIL SAFETY

the Missouri Pacific employs

MODERN SPERRY DETECTOR CARS FOR CONTINUOUS TESTING

120,000
Track Miles Tested To Date by Missouri Pacific Lines



SPERRY RAIL SERVICE • HOBOKEN, N. J. • CHICAGO, ILL.

On a Sunday morning twelve months ago, America got out of bed and yawned and breakfasted, went to church and read the funnies or took a walk with the kids. We were a big, sleepy, good-natured people who only half believed that such things as war existed.

A few hours later we were awake. The thing that made us awake was treacherous and brutal, but the shock of it was as bracing as an icy shower. We knew, at last, where we stood and what we had to do.

THAT WAS A YEAR AGO...

YOU have a broad idea of what the nation has accomplished in this first year of war. We now report to you on what the men of one company have done and are doing.

Long before last December, "Caterpillar" Diesel Tractors and Motor Graders, Engines and Electric Sets were busy on what was then called "defense" work. With the country's entry into war, "Caterpillar" production was turned wholly to war purposes, and our plants, already working three shifts a day, stepped up their output of machines. Additional space was built. More workers were trained.

Throughout this crucial year, 100 per cent of this increased "Caterpillar" production has been going into the war effort — the vast majority of it directly to the *combat forces* of the Army, Navy and Marine Corps, and for our fighting allies. On all the world's battlefronts these machines are right in the thick of the struggle for freedom. "Caterpillar" Diesel equipment is clearing beachheads for attack troops, hauling big guns, building and repairing landing fields, drilling wells and pumping water. It is powering naval craft and generating current for lights and communications, afloat and ashore. But our report would be far from complete if it dealt only with combat activities. Here at home, thousands of older "Caterpillar" machines have been performing what appears to be a miracle. With no new machines coming from the factory to replace them — with fewer men to do the vital wartime jobs, and with heavier loads and longer hours a necessity — they have stood up under grueling punishment, month after month. In industry and construction, in mines and lumber camps and on the farms, "Caterpillar" Diesels are making a mighty contribution to the war effort.

They're no orphans — these tough, veteran machines. They are under able and expert guardianship. Back of their record of performance stand the "Caterpillar" dealers who have met the challenge of this emergency with energy and courage, and have shouldered full responsibility for keeping "Caterpillar" Diesel equipment doing its sturdy best.

With a large supply of replacement parts in their stock rooms, and with complete service facilities available night and day, "Caterpillar" dealers everywhere are pledged to keep "Caterpillar" Diesel Tractors, Graders, Engines and Electric Sets delivering all of the long life and rugged dependability that are built into them — until victory is won.

CATERPILLAR DIESEL

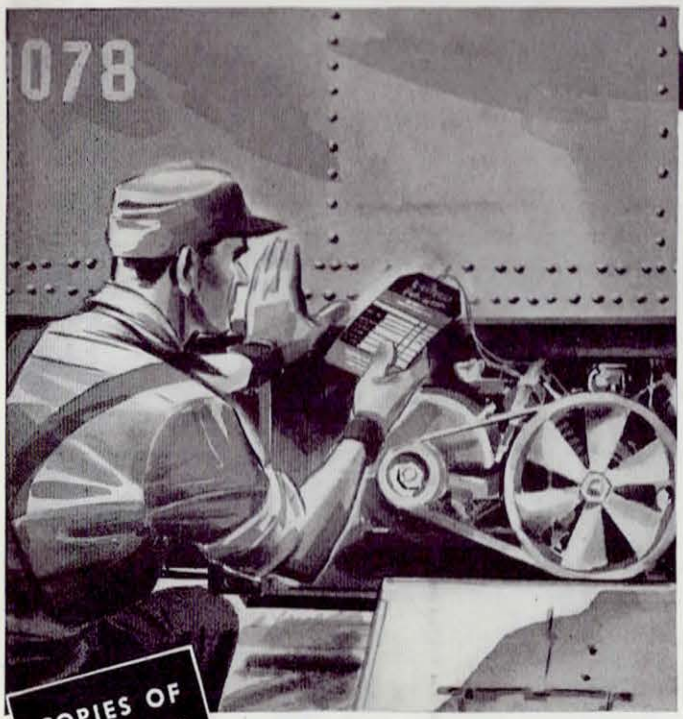
REG. U.S. PAT. OFF.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

TO WIN THE WAR: WORK—FIGHT—BUY U. S. WAR BONDS.

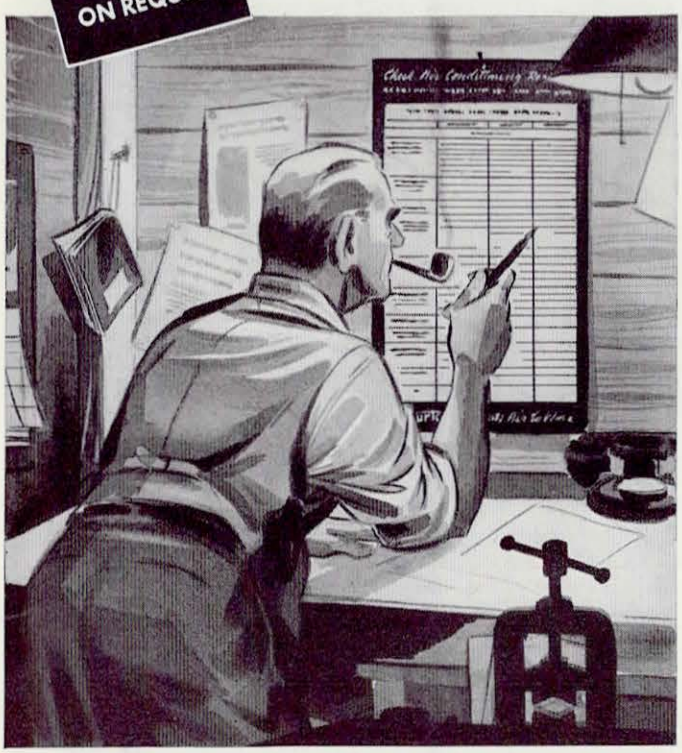
HERE'S TIMELY HELP

for your date with Old Man Winter!



COPIES OF BOTH THESE CHECK LISTS AVAILABLE ON REQUEST

HANDY SERVICE TAG TIED TO EQUIPMENT reminds service men of inspections and simplies procedure.



SIMPLIFIED MAINTENANCE GUIDE FOR SHOP WALL lists the most vulnerable parts and the best methods of servicing them.

STURTEVANT PROGRAM

simplifies cold weather care of air conditioning... prolongs life of equipment!

Winter means plenty of work for your air conditioning maintenance men... work that must be done with a minimum of time and trained man-power. And we consider it our duty and obligation to do everything possible to help you.

So, to assist the American Railroads maintain efficient and uninterrupted service of air conditioned cars, Sturtevant is:—

Continuing emergency repair of equipment which you are unable to service in your own shops.

Offering the helpful maintenance charts and equipment tags shown, that simplify and standardize the most important jobs.

Keeping our Railway Air Conditioning Engineers on call for any further help you need.

For these days of general overhaul, and final preparation for winter operation: Old equipment must be checked and put into condition to run for another season. To prevent loss, most of the Freon should be pumped into receiver for storage, isolating the compressor but leaving about one pound pressure in the system. Belts should be removed, cleaned and stored; heater coils cleaned and fan inlet covered. To check up on these and other vital jobs, to see that each unit is cared for properly and promptly, make sure that your men have a supply of the Sturtevant Equipment Tags and Wall Charts. We will send the quantities of each you require by return mail. No obligation, of course.

Railway Air Conditioning Division
B. F. STURTEVANT CO., HYDE PARK, BOSTON, MASS.

Sturtevant
REG. U. S. PAT. OFF.
Puts Air to Work

THERE WILL BE HAPPINESS AND LAUGHTER FOR THESE YOUNG RAILROADERS . . .

. . . but for their fathers and brothers who are keeping our railroads running in wartime, this Christmas will be a day of continued devotion to duty. Through this and similar unselfish service, we shall preserve freedom in the world and again be able to celebrate "peace on earth . . . good will toward men."

Dearborn

TRADE MARK REGISTERED

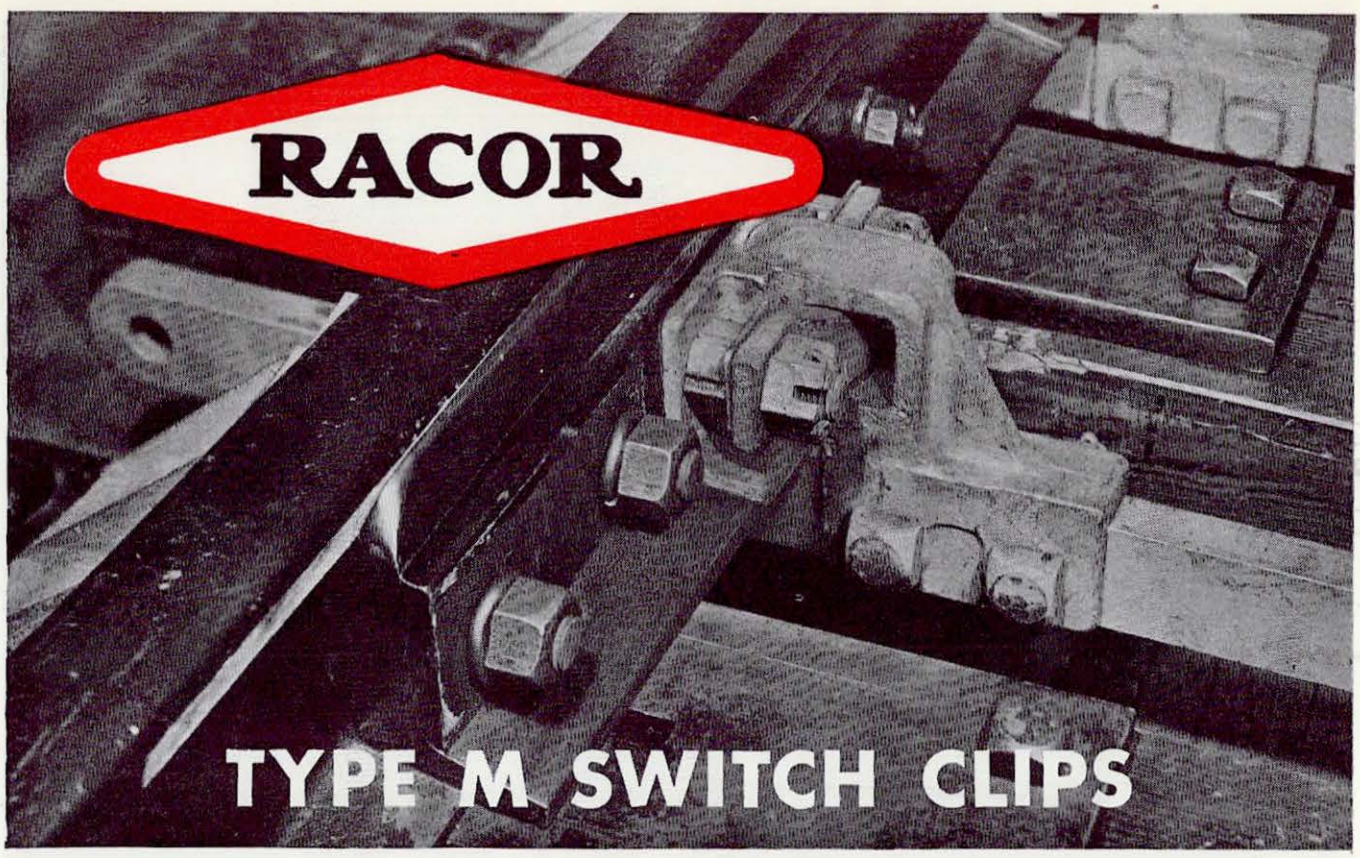
CHICAGO

I. B. CRANES ARE WORKING HARD AND WORKING FAST ON AS LITTLE AS 1.67 GALLONS PER HOUR!

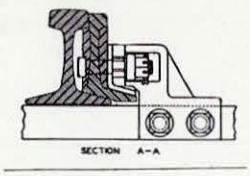
Users of Industrial Brownhoist 20, 25 and 30 ton Diesel-powered cranes engaged in all types of heavy material handling over periods of eight, sixteen and twenty-four hours a day report consumption of only 1.67 to 1.97 gallons of fuel oil per hour. Yet low fuel consumption is only one of the many advantages of an I.B. crane. The patented monitor-type cab speeds up production by providing the operator with 360° visibility, better ventilation and less noise. Controls can be operated from either a standing or sitting position. From undercarriage to boom tip, Industrial Brownhoist cranes are designed and built to do a bigger, faster, lower-cost job of material handling.

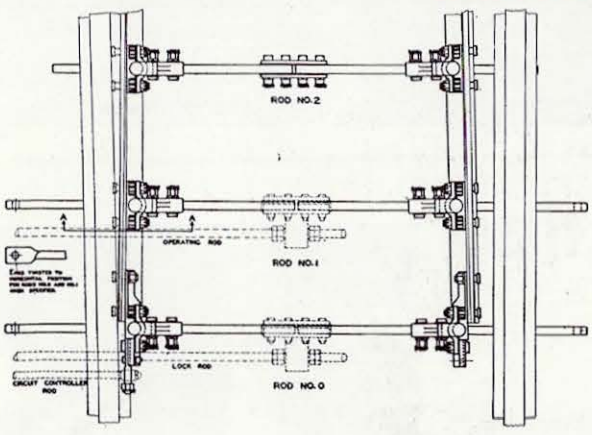
INDUSTRIAL BROWNHOIST BUILDS BETTER CRANES

GENERAL OFFICES: BAY CITY, MICHIGAN • DISTRICT OFFICES: NEW YORK, PHILADELPHIA, PITTSBURGH, CLEVELAND, CHICAGO



PREVENT Rolling of Points
PROVIDE Easy Operation
INSURE Long Life of Points





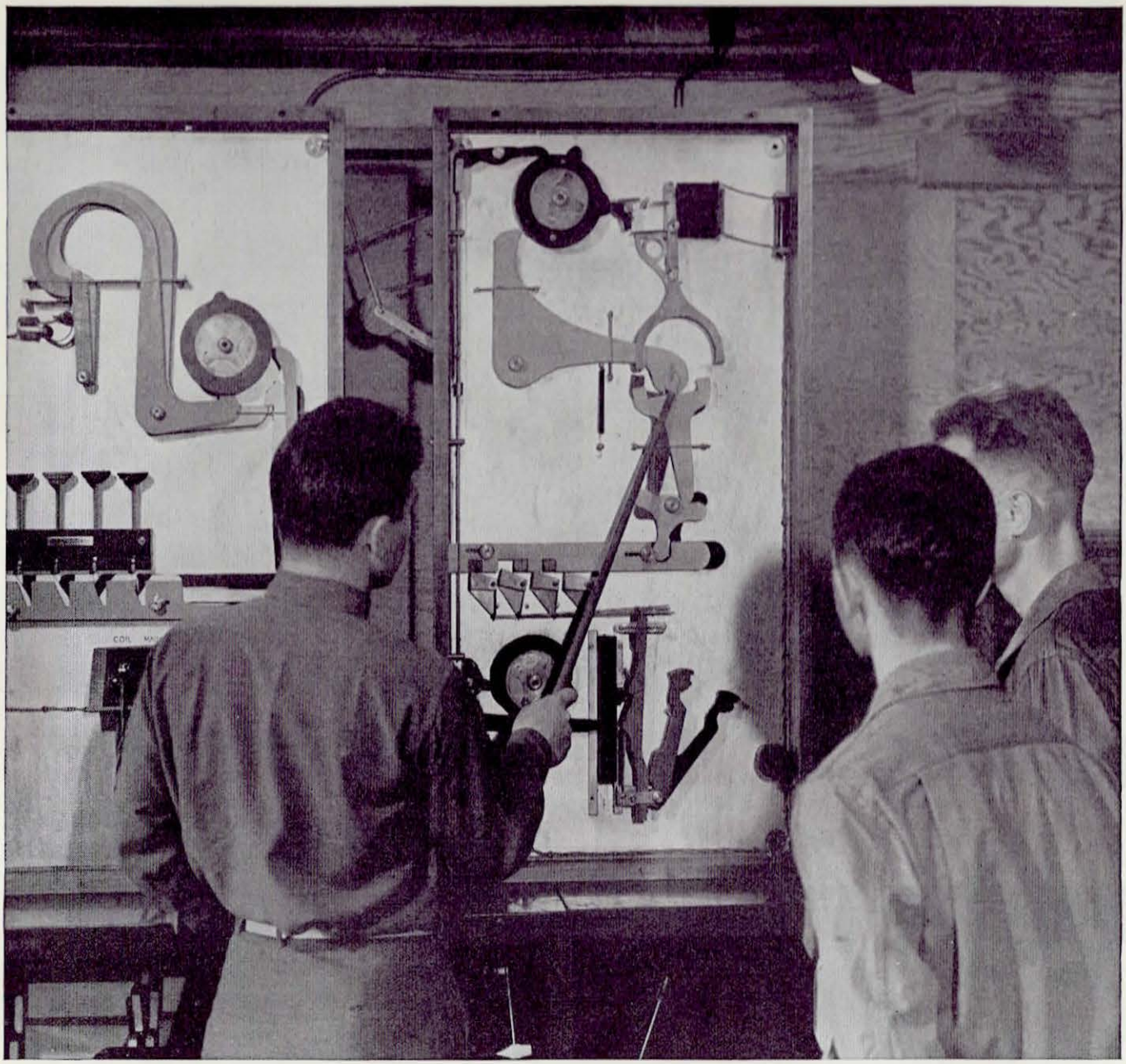
Installations of RACOR Type M Switch Clips made on high rails meet the most rigid tests even after three years of heavy service.

Free swiveling, easy to operate Type M Switch Clips are rigid and strong and prevent rolling of points. Correct position with respect to stock rail is assured and point bearings can be tightened to rail without affecting action. They are recommended for main line switches.

Ask our representative or write for complete information.

RACOR **RAMAPO AJAX DIVISION**

THE AMERICAN BRAKE SHOE & FOUNDRY CO. • 230 Park Ave., New York



Teaching soldiers to save time ...with Teletype

MEET CLEMENTINE! That's what the boys at Fort Monmouth call this diagrammatic, slow motion model that shows every operation of both the Teletype transmitter and receiver. Working for the Signal Corps, she's helping American soldiers learn how to repair and maintain all types of Teletype equipment.

Just as it's doing for most of the nation's leading railroads, Teletype is saving time for the Army, Navy, Coast Guard and Marines. Giving instantaneous, typewritten communication, it links bases, camps, forts and depots. In the field, Teletype helps to coordinate operations of attacking forces.

No wonder then, so large a percentage of current Teletype production is being rushed into government service.

TELETYPE CORPORATION, Chicago

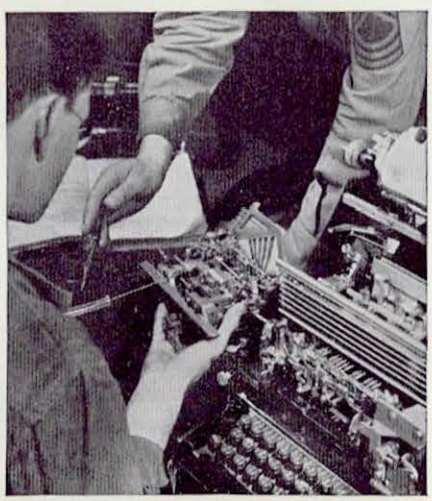
TELETYPE

REG. U. S. PAT. OFF.

SUBSIDIARY OF

Western Electric Company

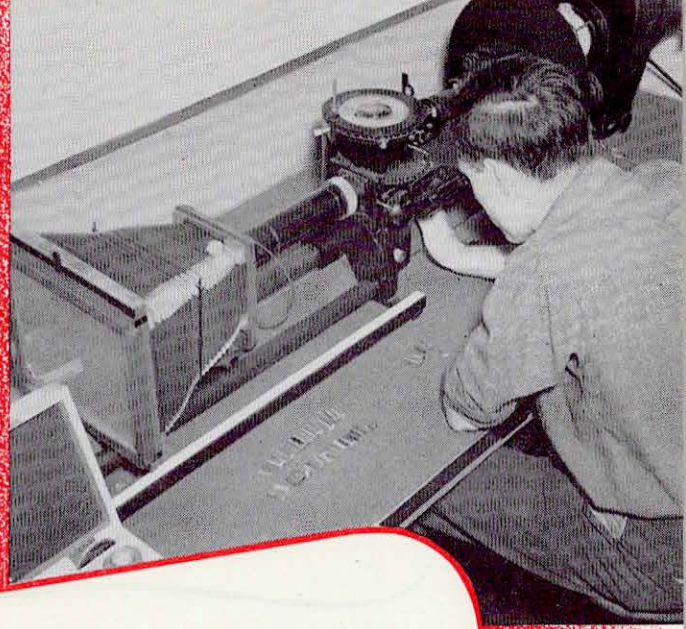
INCORPORATED



Under the sergeant's instruction, Army private learns the correct method of testing tension of one of the many vital springs in the Teletype carriage.

Zeiss Metalgraphic Microscope.

Below: Electric heat-treating furnaces.

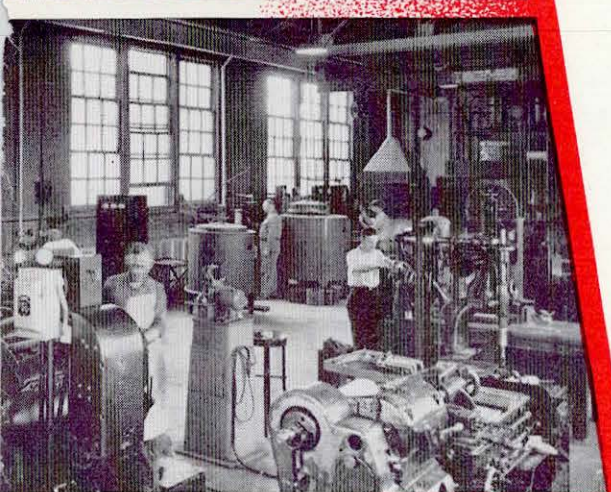


WORKING FOR *tomorrow*

THE research laboratories of American Steel Foundries are constantly engaged in developing better steel castings for our fighting forces, and in improving railway specialties to meet the requirements of present-day transportation.

Using the finest of modern equipment, our highly trained metallurgical technicians supervise each phase of production, from blending of raw materials to final inspection.

They are also busy working for *tomorrow* when still greater improvements will be expected of our industry.



General view of one of our laboratories.

AMERICAN STEEL FOUNDRIES *Chicago*

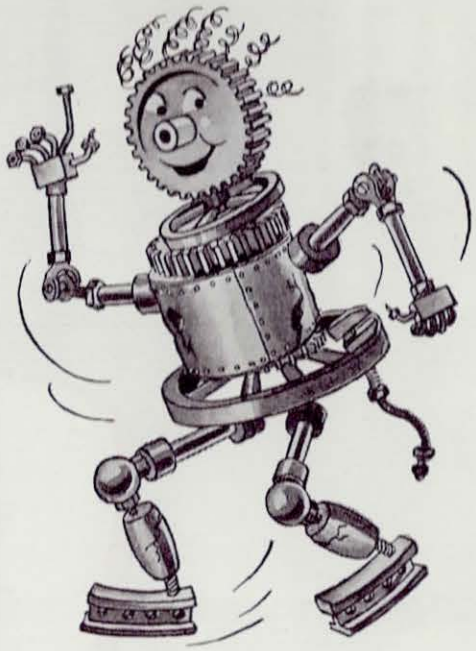
Segregate Your Scrap Metal by Alloy Content

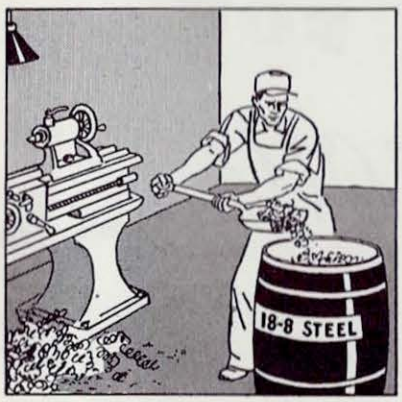
SCRAPPY SAYS:

To insure your supply of alloy steel needed for weapons of war—

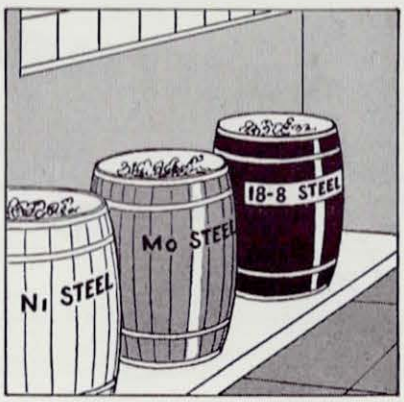
To prevent the waste of tons of alloys lost as residual content in plain-carbon steels—

HERE'S WHAT YOU DO:



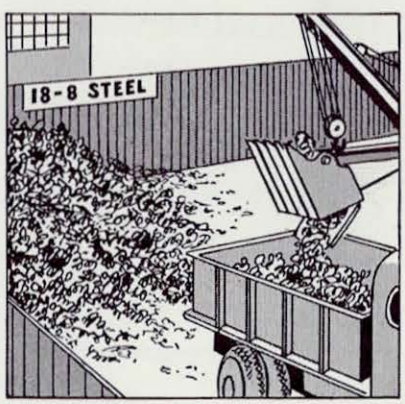


1. Segregate your alloy metal at the time scrap is created—at the lathe, shears, planer, screw machine.

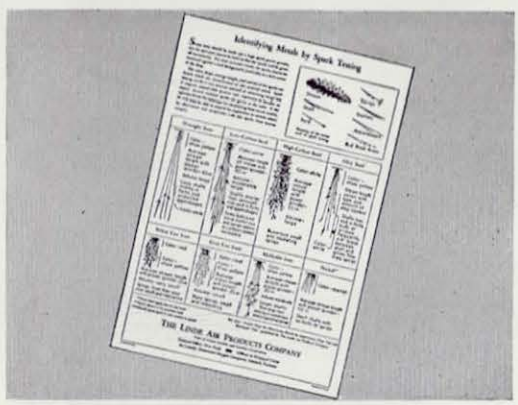


2. Place the scrap in containers correctly labeled with the known analysis of the steel or its grade number.

3. Maintain a system of replacement when containers are full. Label replacements to compare with filled containers.



4. Keep the alloy metals segregated in the scrapyard while they are waiting shipment back to the steel mill.



5. If scrap does become mixed, or if you have metal, such as old equipment, of unknown analysis, you will find spark testing is helpful in identifying the alloy content. The Linde Air Products Company, another unit of Union Carbide and Carbon Corporation, has published the spark-testing chart shown here. If you can use it, ask for as many copies as you want, by Form Number 4666.

ELECTRO METALLURGICAL COMPANY
Unit of Union Carbide and Carbon Corporation

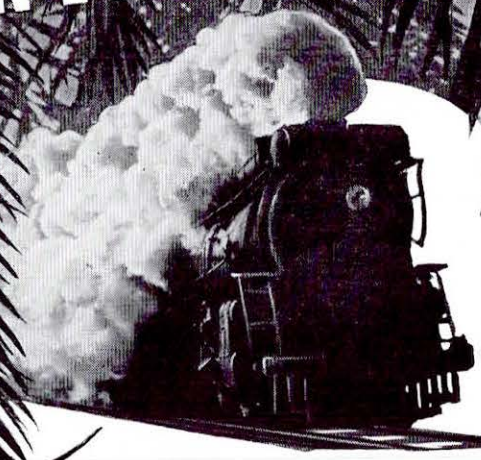
UCC

30 East 42nd Street, New York, N. Y.

As a producer of ferro-alloys and alloying metals used in the production of alloy steels, Electro Metallurgical Company is concerned with the conservation of these vital materials. From their fund of metallurgical information Electromet's technical service staff can advise you on the selection, fabrication, and use of alloy steels. Your request for this service will not obligate you in any way.

Electromet
Trade-Mark
Ferro-Alloys & Metals

AMERICAN LOCOMOTIVES LANDED IN FRENCH NORTH AFRICA



NOW it can be told: When the American Armada cast its anchors along the coast of Morocco, it threw ashore equipment — complete from pins to locomotives. The U.S. standard-gauge railroads from Casablanca to Oran, Algiers and Tunisia are moving men and equipment with American engines, safe from coastal attack. . . . The make and type of these locomotives are military secrets, but it is no secret that our 69 years' experience in producing

N-B-M Bronze Engine Castings, Car Journal Bearings and Babbitt Metals

has contributed much toward making American railroad equipment stand up under unusual wartime conditions.

NBM

NATIONAL BEARING METALS CORPORATION

ST. LOUIS • NEW YORK

Victory marches to the drum-beat of the rails!

Listen! . . . even across the far and silent reaches of the winter night, the sound comes to you. You catch it now? . . . the never-ceasing, ever-rising drum beat of the rails!

To its swinging, surging cadence, each sixty seconds of the day and night a million tons of vital freight moves *another mile on its march to Victory!*

Through the sweat and labor of a million American railroad men—and the vision and daring of American railroad management—each new wartime demand for additional transportation has thus far been met.

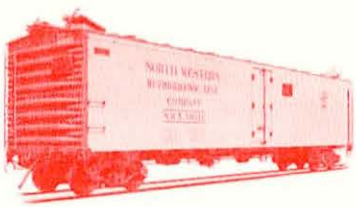
But the calls of war grow ever greater—the need ever more urgent. Let every American now highly resolve to do everything within his power to keep Victory marching — marching faster! . . . faster! . . . faster! to the drum beats of the rails!

In its 87 years' experience in car building, A.C.F. has never found any substitute for quality of workmanship and soundness of design.

FOR VICTORY

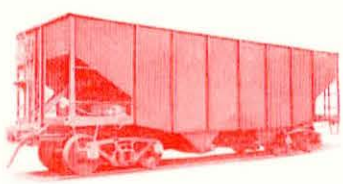
BUY U. S. WAR BONDS AND WAR SAVINGS STAMPS

WHATEVER A.C.F. BUILDS—IT IS KNOWN TO BUILD WELL!

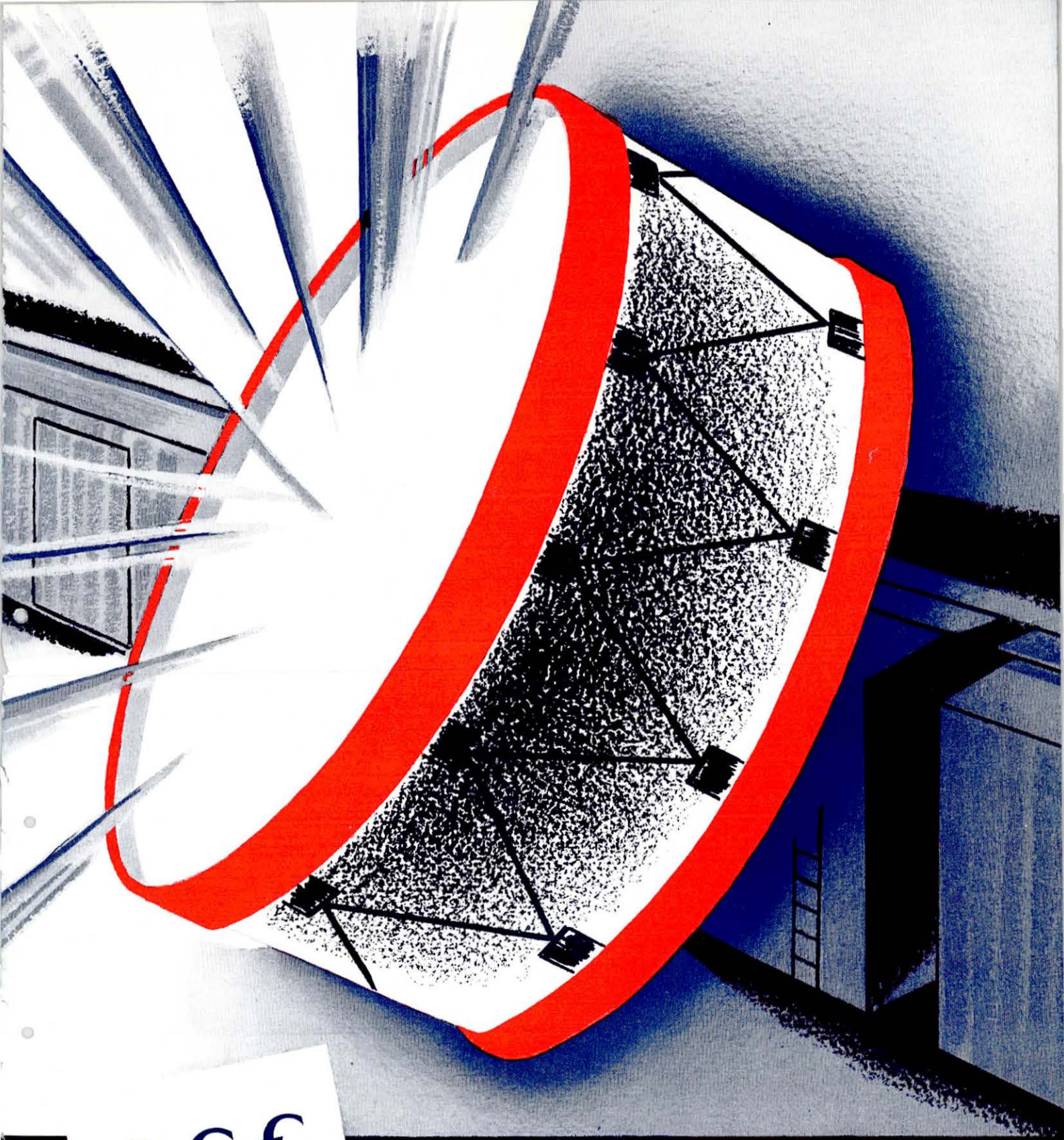


A.C.F. REFRIGERATOR CAR

A.C.F. GONDOLA CAR



A.C.F. HOPPER CAR



a.c.f.

AMERICAN CAR AND FOUNDRY COMPANY

NEW YORK • CHICAGO • ST. LOUIS • CLEVELAND • PHILADELPHIA • PITTSBURGH • ST. PAUL • SAN FRANCISCO

RIGHT OF WAY FOR THE U.S.A.!

WHEN Uncle Sam wants to move troops he calls on the railroads.

He is moving *a million men every month* — and our Army is getting bigger every day.

A million men fill a lot of passenger cars, so you can get some idea what "right of way for the U. S. A." really means.

It means that, with what's left over, we have to carry the people who travel on business—those who take trains to conserve the nation's rubber supply — and all the thousands of soldiers and sailors who each week travel by rail on furlough.

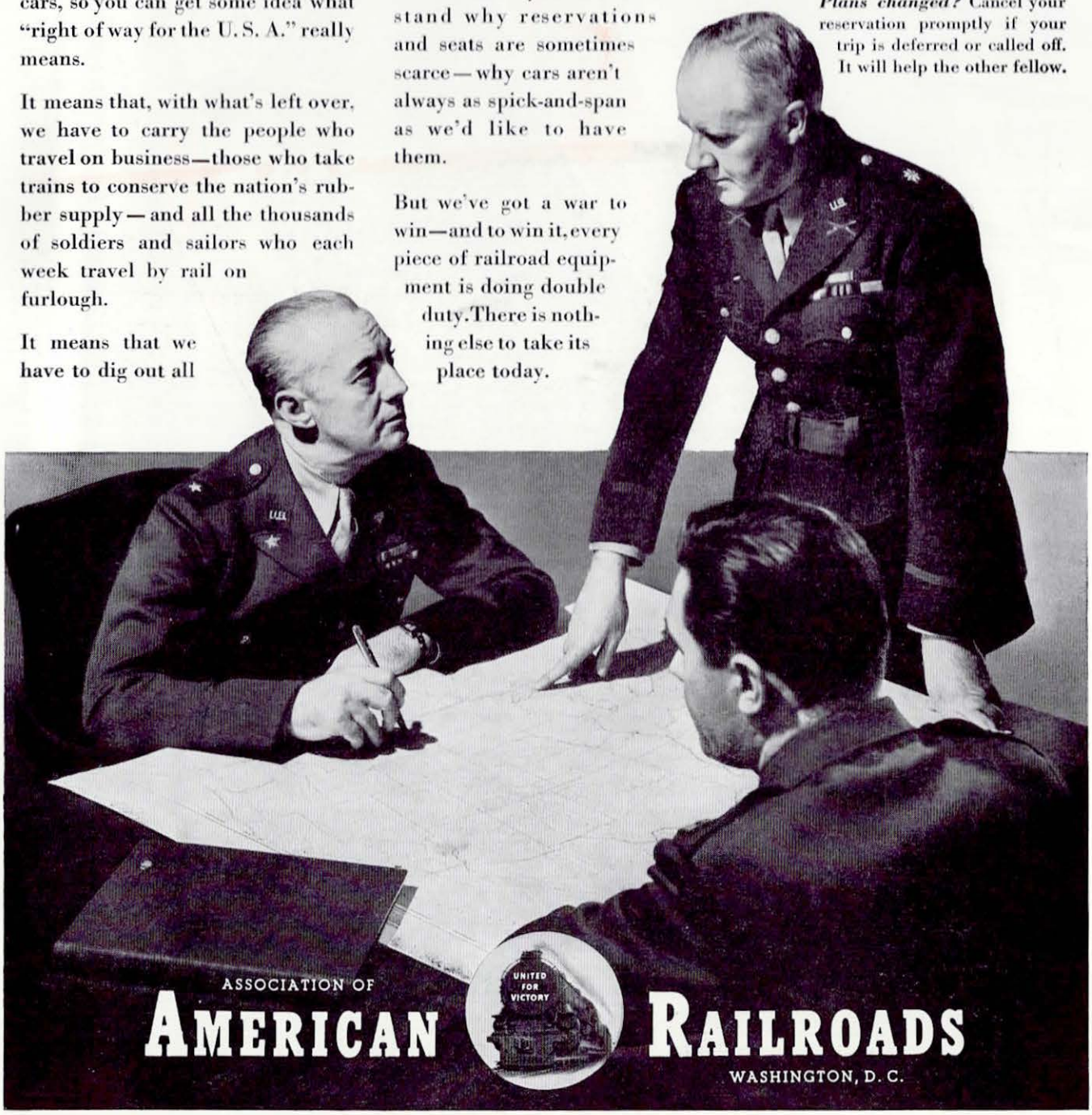
It means that we have to dig out all the passenger cars we can find, because war demands for critical materials prevent us from getting new ones — and some cars brought back into service lack the conveniences of those built in recent years.

So we know you can understand why reservations and seats are sometimes scarce — why cars aren't always as spick-and-span as we'd like to have them.

But we've got a war to win—and to win it, every piece of railroad equipment is doing double duty. There is nothing else to take its place today.

DON'T WASTE TRANSPORTATION

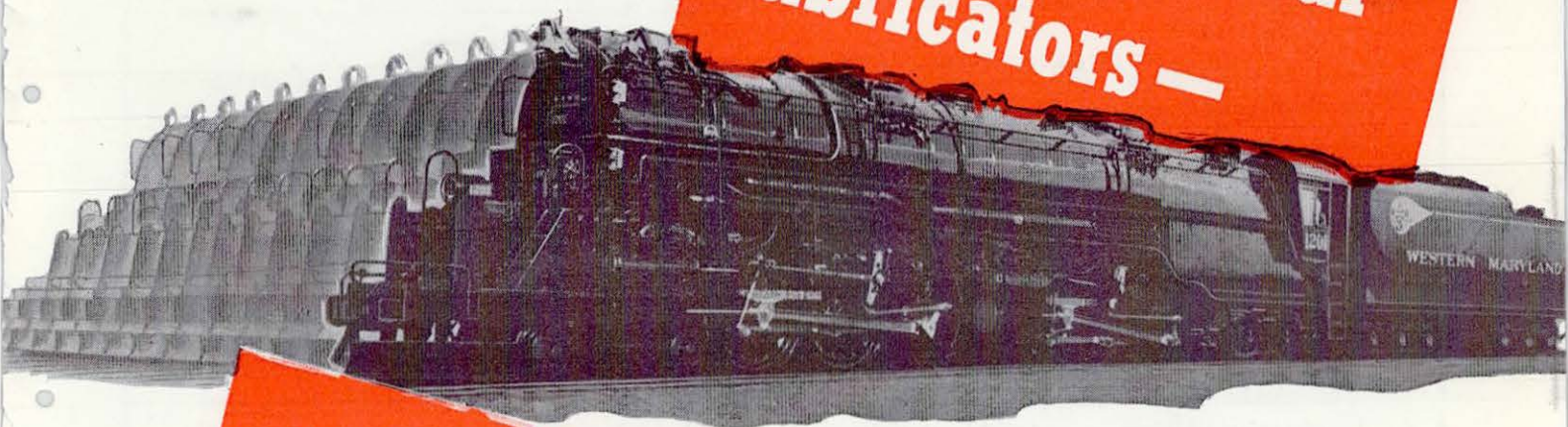
Plan early. Make reservations and buy tickets as far in advance as possible. ***Avoid week ends.*** Do your traveling in the middle of the week whenever possible. ***Travel light.*** Limit your hand baggage to actual requirements. Other baggage can be checked. ***Plans changed?*** Cancel your reservation promptly if your trip is deferred or called off. It will help the other fellow.



ASSOCIATION OF
AMERICAN RAILROADS
UNITED FOR VICTORY
WASHINGTON, D. C.

In 24 months.. OIL-lubricated driving-journals ..on these 12 fast freight locomotives.

saved enough in lubricant alone to pay the cost of the driving-journal lubricators—



saved enough in crown brasses to pay double the cost of all the lubricators

In 24 months of service with Hennessy OIL-lubricators in the driving, tender, and trailer journals, these 12 fast-freight locomotives rolled up one million miles of severe service. In those 2 years—not a single heating occurred. Not a single crown bearing was renewed. Not a single journal was turned. And crown brasses still show no appreciable wear.

Savings in lubricant and replacement brasses have already paid for Hennessy lubricators—three times over. To say nothing of the labor saving, or the increased availability and ton-mileage of the locomotives. 4600 Hennessy Mechanical Driving-Journal Lubricators now in use. Hennessy Lubricator Co., 75 West St., N. Y.

HENNESSY LUBRICATOR

MECHANICAL **OIL** LUBRICATION FOR **ALL** RAILWAY JOURNALS

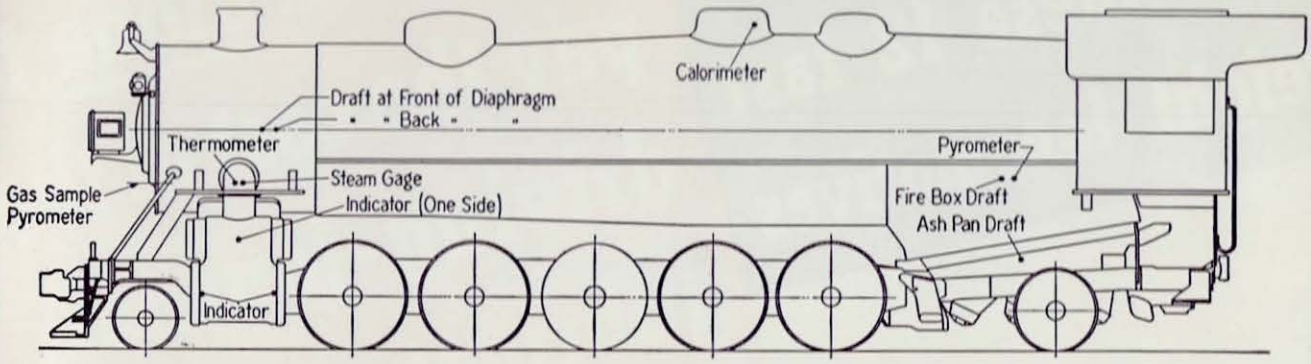
For typical locomotives, equipped with Hennessy OIL-Lubricators, see our advertisements in Railway Age for November 7 and October 17

Now Ready

THE STEAM LOCOMOTIVE

By RALPH P. JOHNSON, M. E.

Chief Engineer, The Baldwin Locomotive Works



This is a complete treatise on the theory, operation and economics of the American steam locomotive. It is based upon current practice and recent research and material that has been tested out by the author and his co-workers. Comparisons are drawn with Diesel-electric and other types of motive power.

The author is a recognized authority on locomotive design, construction and testing. His experience in testing locomotives here and abroad with the aid of dynamometer cars is drawn upon for interesting observations on road testing methods.

To keep the subject matter as short as possible it has been stripped down to fundamentals, with just enough background included to indicate paths of development. The many tables have been checked against latest available data and the line drawings have been specially made for this book.

Sent on Ten Days' Free Examination

FREE EXAMINATION COUPON

Simmons-Boardman Publishing Corporation
30 Church Street, New York, N. Y.

Please send me a copy of R. P. Johnson's new book, THE STEAM LOCOMOTIVE, on 10 days' free examination. I will either remit the list price of $3.50 or return the book postpaid.

Name.....

Address.....

City.....State.....

Company.....Position.....

R. A. 12-12-42

Table of Contents

Locomotive Classification—Locomotive Fuels—Combustion—Front Ends—Locomotive Cinders—Water for Boiler Use—Evaporation—Superheat—Tractive Force—Horsepower—Resistance—Tonnage Rating—Curves—Valve Gears and Valve Setting—Counterbalancing—Acceleration—Torque Diagrams—Locomotive Testing—Dynamometer Cars—High Speed Trains—Streamlined and Light Weight Trains—Motive Power for High Speed Service—Motive Power for Switching Service—Relation of Locomotive Operating Expense to Net Operating Income—Locomotive Repair Costs—Economic Life. Appendix A—Locomotive Testing Apparatus. Appendix B—Derivation of Economic Life Formula. Appendix C—Typical Locomotive Dimensions.

502 pages, 100 drawings and photographs, 70 tables, 6 x 9, cloth, $3.50

Behind the Lines

ON THE TRANSPORTATION FRONT

EVERY locomotive repair shop is playing a vital part in keeping the guns, tanks, planes, munitions and vital supplies rolling to the front lines on schedule.

The supervisory forces, machine operators and men on the erecting floor deserve nationwide recognition for the splendid job that they are doing.

Bullard R. R. Shop Units will be found in service in most of the leading railroad back shops. Their production helps to speed classified repairs and keep power on the road, rolling supplies to Victory.

In spite of the tremendous burdens imposed on the staff by the requirements of war industries, BULLARD engineers find time to keep in touch with the boring and turning problems in locomotive repair shops. They are always ready to assist in preparation of plans for railroad shop modernization.

THE BULLARD COMPANY

BRIDGEPORT, CONNECTICUT

Tell me . . . what does a Traffic Department Representative do in *WARTIME?*

American industry—men and machines—has been converted to the war effort.

So, too, has the Traffic Department of the Pennsylvania Railroad!

Raw materials must move to war plants. Finished products from assembly lines must roll to battle lines. In both cases, years of experience and up-to-minute knowledge possessed by Pennsylvania Railroad Traffic Representatives are of paramount importance.

By reporting whereabouts of vital materials in transit, representatives enable war plants to "time" deliveries, assuring a steady flow to assembly lines . . .

By dissemination of rules and regulations and rates controlling war shipments, delays in movements are prevented . . .

By advocating and assisting in the maximum loading of freight equipment, they make more cars available for the war effort and for shippers . . .

By arranging for the movement of troops and personnel and assisting in the multitudinous matters involving passenger transportation, representatives render a valuable service to our military forces . . .

The Army, the Navy, and other governmental agencies, as well as the war industries have first call on our facilities. Come what may, no matter what the cost, our first and foremost obligation is to furnish them with fast and dependable service, wherever and whenever needed.

Shippers everywhere also welcome this service. Our Traffic Representatives want to cooperate in the "war of movement". And make no mistake about it, they are at your call. Victory is as much their business as it is yours.

BUY U. S. WAR BONDS AND STAMPS

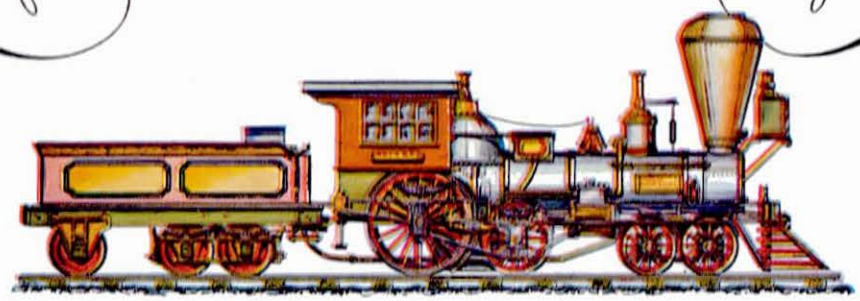
Pennsylvania Railroad

SERVING THE NATION

open here

The Latest Power for the Pennsylvania

by BALDWIN



THE first THE latest Specifications

BALDWIN POWER FOR THE PENNSYLVANIA

In July, 1849, Baldwin completed the "Mifflin", a fast passenger locomotive, which was the first Baldwin engine to be placed in service on the new line extending from Harrisburg to Lewistown. Two similar locomotives, the "Blair" and "Indiana", were built for the Pennsylvania by Baldwin later in the same year, 1849.

These locomotives had a single pair of driving wheels back of the firebox, one pair of carrying wheels in front of the firebox, and a four-wheeled truck under the front end. An unusual feature was a "traction increaser" for the purpose of transferring weight from the carrying wheels to the drivers in starting, thus increasing the adhesion.

The new streamlined T1's, now in service on the Pennsylvania from Harrisburg to Chicago, are the latest locomotives of a very large number which Baldwin has built for the Pennsylvania since this great system was organized on February 25, 1847.

SPECIFICATIONS OF THE LATEST POWER FOR THE PENNSYLVANIA

BALDWIN LOCOMOTIVE FOR THE PENNSYLVANIA

Gauge	4' 8½"
Cylinders (4)	19¾" x 26"
Valves	Poppet type

BOILER

Type	Modified Belpaire
Diameter	F. 91½" B. 100"
Working pressure	300 lb.
Fuel	Bituminous coal

Firebox

Material	Steel
Staying	Radial
Length	138"
Width	96"
Comb. Cham. Length	96"

Tubes

Diameter	5½"	2¼"
Number	69	184
Length	18' 0"	18' 0"

Heating Surface

Firebox	269 sq. ft.
Combustion chamber	150 sq. ft.
Tubes 2¼"	1940 sq. ft.
Tubes 5½"	1779 sq. ft.
Circulators	71 sq. ft.
Total	4209 sq. ft.
Superheater	1680 sq. ft.
Grate area	92 sq. ft.
Firebox volume	641 cu. ft.

DRIVING WHEELS

Diameter, outside	80"
Diameter, center	72"
Journals, main—	
11½" diam. roller bearing	
Journals, others—	
11½" diam. roller bearing	

ENGINE TRUCK WHEELS

Diameter, front	36"
Journals—	
7" diam. roller bearing	
Diameter, back	42"
Journals—	
8" diam. roller bearing	

WHEEL BASE

Driving	25' 4"
Rigid	18' 5"
Total engine	51' 11"
Total engine & tender	107' 0"

WEIGHT, *in Working Order*

On driving wheels	268,200 lb.
On truck, front	100,200 lb.
On truck, back	128,800 lb.
Total engine	497,200 lb.
Total tender, fully loaded	433,000 lb.
(Average weight per pr. drivers	67,050 lb.

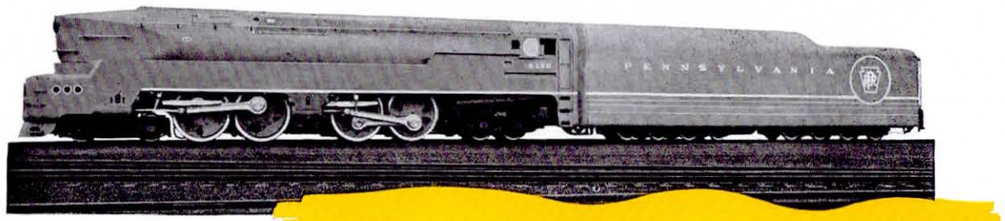
TENDER

Wheels, number	Sixteen
Wheels, diameter	36"
Journals—	
6½" diam. roller bearing	
Tank capacity	19,500 U.S. gal.
Fuel capacity	41 tons
*Tractive force	65,000 lb.
Service	Passenger

Equipped with Type "A-S" superheater, feed water heater, stoker, five circulators, power reverse, one piece cast steel locomotive bed with integral cylinders, and air brake on all front truck, trailer truck, driving and tender wheels, with two 8½" cross-compound air pumps.

*Booster (estimated to develop 13,500 lb. tractive force), on engine 6111 only.

THE LATEST POWER FOR THE PENNSYLVANIA—BUILT BY BALDWIN



Two Class T1 locomotives, road numbers 6110 and 6111, built by The Baldwin Locomotive Works, are now in fast passenger service between Harrisburg and Chicago.

They have been designed to do work in steam-operated territory corresponding to that done by the large electric locomotives, Class GG1, in electrified territory, thus avoiding the double-heading of heavy passenger trains. Their over-all dimensions are such that they can be operated on any part of the main lines of the Pennsylvania System.

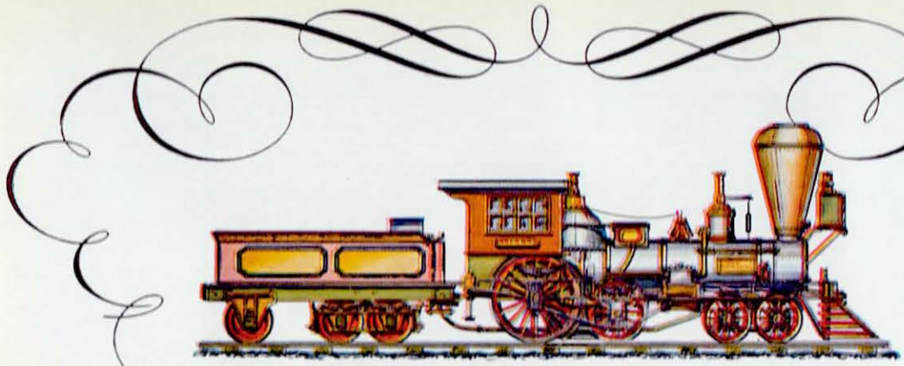
The T1 locomotives, general specifications of which are given on the following page, are two of the reasons why the Pennsylvania is well able to handle the present tremendous increase in wartime traffic.

The Latest Power for the Pennsylvania

open here

by

BALDWIN



THE first

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The new streamlined T1's, now in service on the Pennsylvania from Harrisburg to Chicago, are the latest locomotives of a very large number which Baldwin has built for the Pennsylvania since this great system was organized on February 25, 1847.

THE latest

Specifications

BALDWIN LOCOMOTIVE FOR THE PENNSYLVANIA

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Diameter	F. 91½″ B. 100″
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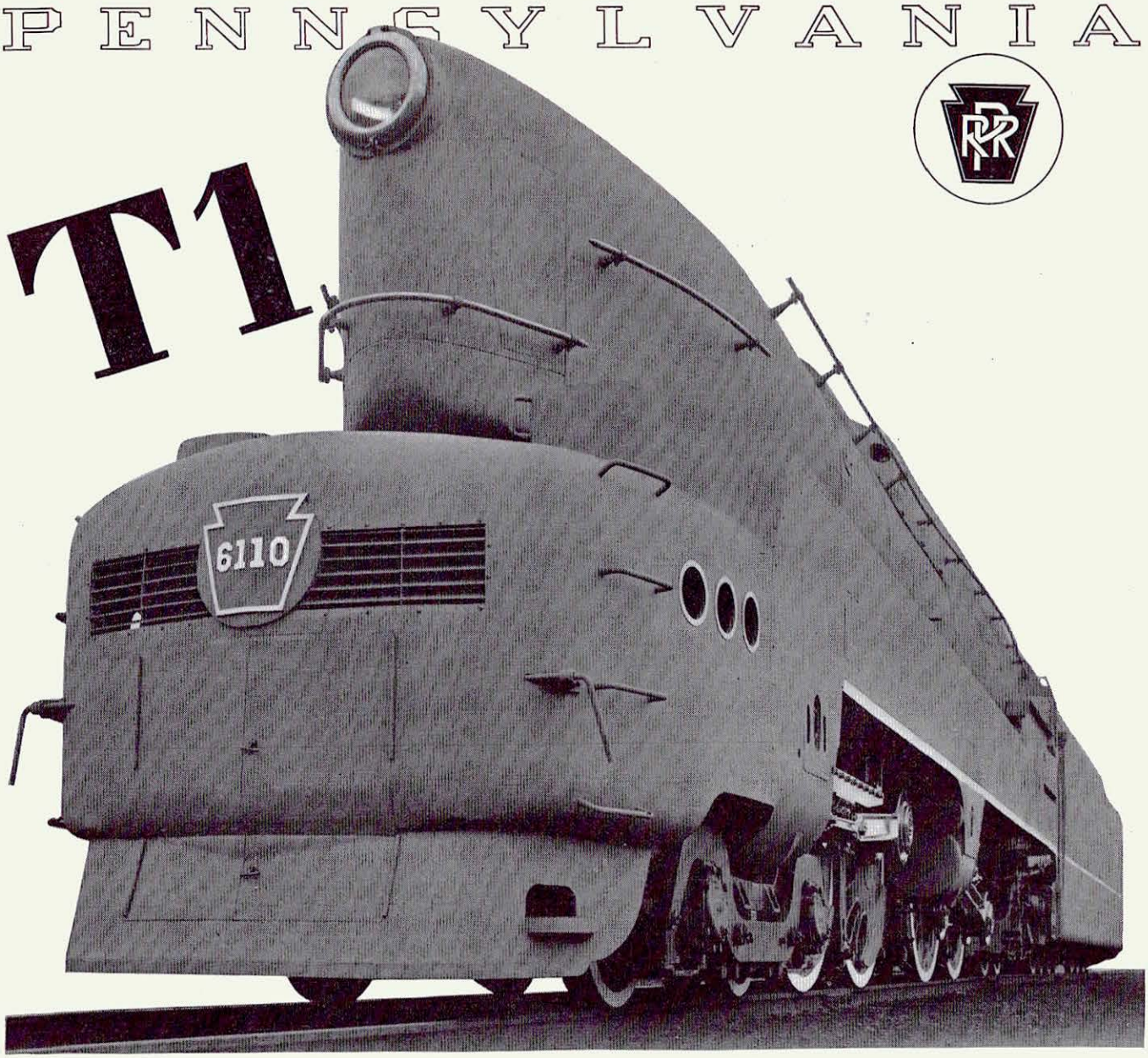
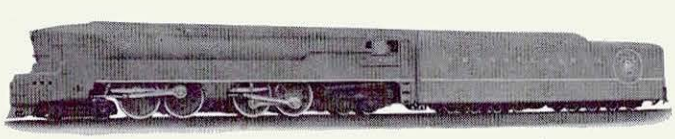
PENNSYLVANIA

T1



Stimulating to the imagination as though produced by the genie of Aladdin's lamp, yet this new steam locomotive was created by skilled workers, modern shops and practical railroad men to do an essential job . . . dependably . . . efficiently. Standard is proud to have played a part in producing the two class T1 "land dreadnaughts" now in service for the Pennsylvania Railroad by supplying many steel forgings and castings. These include driving wheel centers and tires, truck and tender wheels, axles, locomotive and tender springs, guide bars, and numerous steel castings.



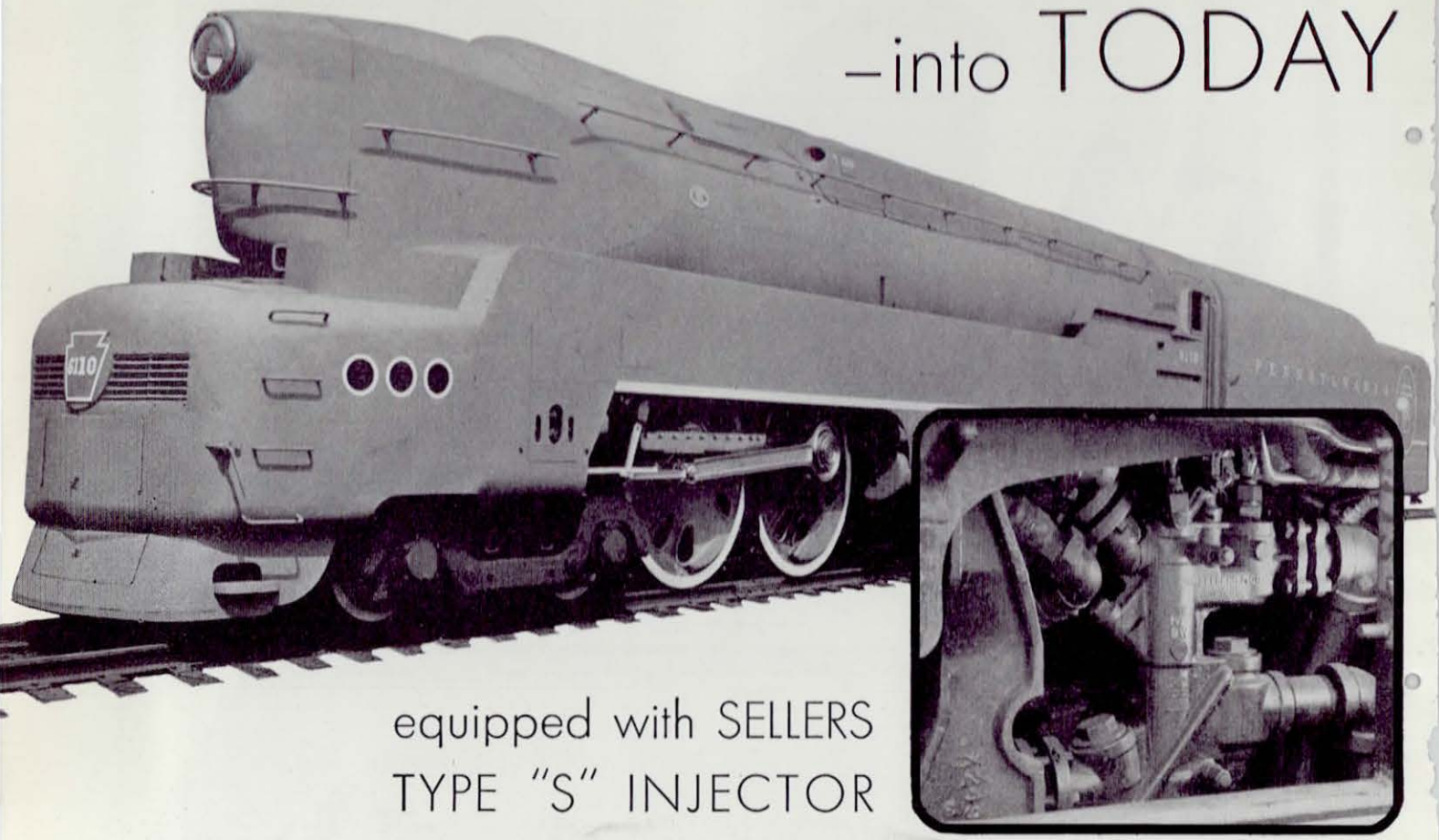
STANDARD STEEL WORKS

DIVISION OF THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA

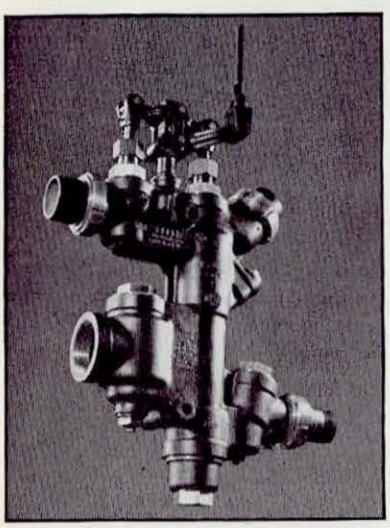
OUT OF THE FUTURE

–into TODAY



equipped with SELLERS
TYPE "S" INJECTOR

The new Pennsylvania 4-4-4-4 type locomotives, built by Baldwin, are remarkable, not only in their appearance which the layman will immediately recognize as the most beautifully streamlined locomotive on the rails, but for their startling high speed performance.



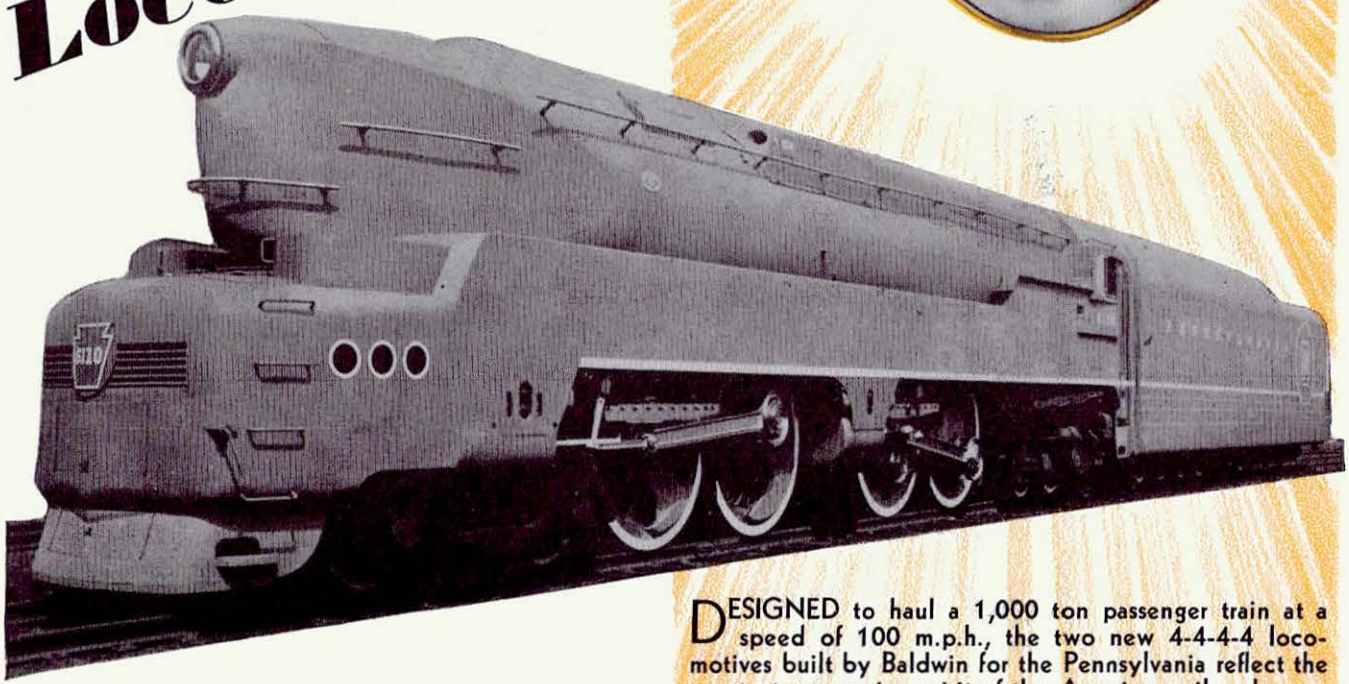
That Sellers Type "S" Injectors were used on these "locomotives of the future" is gratifying, but the choice was a logical one considering the exceptional service these injectors render. The advantages over old-style injectors include single lever control for starting, stopping and regulating, can be located high above rail hazards, will drain water tank completely when necessary, does not permit scale formation and many other features which engine crews are quick to appreciate.

WILLIAM SELLERS & CO., INC., 1600 Hamilton St., PHILADELPHIA, PA.

ARMY E NAVY

Sellers

On The New PRR Locomotives



Cross Section of UNIVERSAL Sectional Packing

"Pioneers In The Development of the Light Weight Piston and Combination Sectional Packing."

ESTABLISHED 1872

DESIGNED to haul a 1,000 ton passenger train at a speed of 100 m.p.h., the two new 4-4-4-4 locomotives built by Baldwin for the Pennsylvania reflect the constant progressive spirit of the American railroads.

To meet the high speed requirements with minimum dynamic augment all reciprocating parts were made of special Alloy Steel.

It is significant that L.F.M. Light Weight Pistons and Combination Sectional Packing were applied on both locomotives. They contribute to the reduction of counterbalance weights and decrease in track stresses.

L.F.M. Light Weight Pistons and Universal Sectional Packing will be found on many Pennsylvania locomotives in all types of service.

THE LOCOMOTIVE FINISHED MATERIAL CO.

ATCHISON, KANSAS

NEW YORK CITY CHICAGO, ILLINOIS

LFM

LIGHT WEIGHT PISTONS

and Combination Sectional

BULL RING PACKING

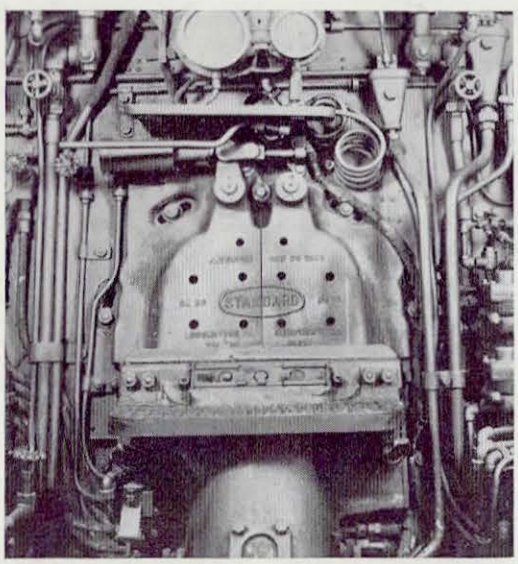
KING PRODUCTS

King Metallic Piston
Rod Packings Used On
The New Pennsylvania
T-1 Locomotives . . .

THE U. S. METALLIC PACKING CO.
PHILADELPHIA, PENNSYLVANIA

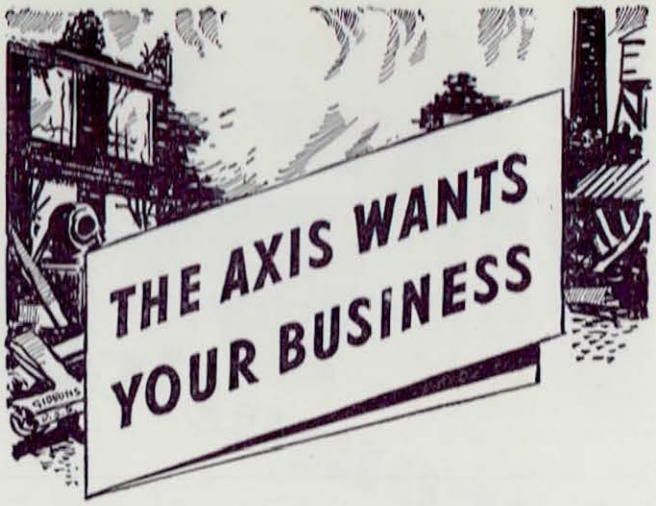
Representatives in Canada:
Joseph Robb & Company, Limited, Montreal.

"STANDARD" FIRE DOORS
on the
PENNSYLVANIA 4-4-4-4 TYPE



"Standard" can furnish Fire doors for all types of locomotives new and old.

THE STANDARD LOCOMOTIVE EQUIPMENT CO.
TOLEDO, OHIO



THIS is more than a war of mechanical monsters clashing in the night . . . more than a war of production.

It is a war for markets—*your* markets! The Axis wants your business—wants to destroy it once and for all.

With so much at stake, there is no doubt you will want to do everything you can to meet this Axis threat. Two ways are open: Speed production and put 10 percent of your income into WAR BONDS! The only answer to enemy tanks and planes is *more* American tanks and planes—and your regular, month-by-month purchases of War Bonds will help supply them. Buy now *and keep buying*.

THE GOAL: 10% OF EVERYONE'S INCOME IN WAR BONDS

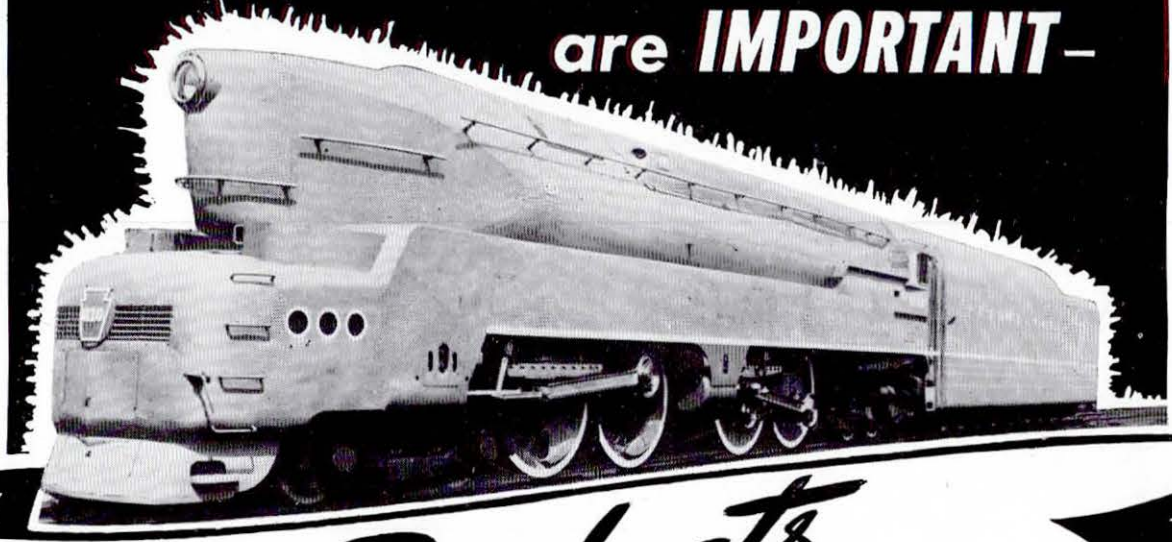
When you install the Pay-Roll War Savings Plan (approved by organized labor), you not only perform a service for your country but for your *employees*. Simple to install, the Plan provides for regular purchases of War Bonds through voluntary pay-roll allotments.

Write for details *today!* Treasury Department, Section R, 709 12th St. NW., Washington, D. C.

War Savings Bonds

This space is a contribution to Winning the War by
RAILWAY AGE

When Safety and Efficiency are IMPORTANT—



Barco Products ARE PREFERRED

Barco All Metal Engine Tender Connections and Barco Flexible Joints are doing their bit to assure safe and efficient operation of the new 4-4-4-4 Class T-1 Locomotives, which Baldwin has built for the Pennsylvania Railroad.

BARCO PRODUCTS

- BARCO Metallic Steam Heat Connections for air, steam, oil, water between engine and tender and articulated units.
- BARCO Joints provide flexibility between auxiliary devices and piping.
- BARCO Float Type Low Water Alarm.
- BARCO Type M Power Reverse Gears.
- BARCO Steam Heat Connections on rear of tender and between cars.
- BARCO Gasoline Operated Unit Tytampers and Hammers.

BARCO ALL METAL
ENGINE TENDER CONNECTIONS
FOR
STEAM · · · AIR
WATER · · · OIL
SAVE RUBBER

BARCO MANUFACTURING COMPANY
1800 W. Winnemac Ave. NOT INCORPORATED Chicago, Illinois
In Canada THE HOLDEN COMPANY, LTD.
Montreal — Moncton — Toronto — Winnipeg — Vancouver

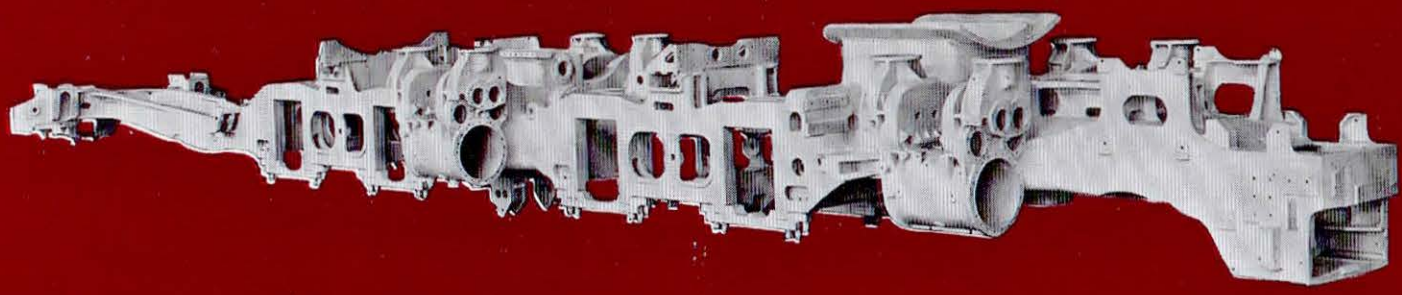
Pennsylvania Railroad

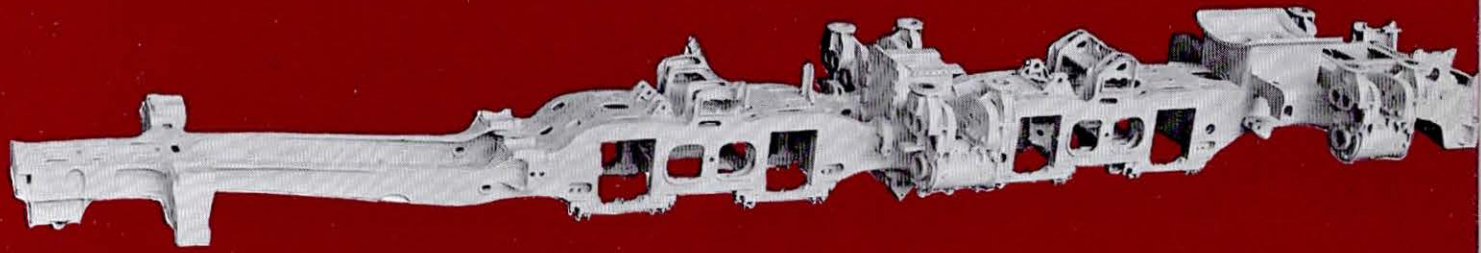
Selects

COMMONWEALTH LOCOMOTIVE BEDS

For These Newest and Most Powerful 4-4-4-4's

GENERAL STEEL





Two views of the LOCOMOTIVE BED with two sets of cylinders—cast integral—arranged for poppet valves.

THE Pennsylvania Railroad's new, high-speed, extremely powerful 4-4-4-4 type locomotives are equipped with COMMONWEALTH One-Piece Cast Steel Locomotive Beds, and also with COMMONWEALTH 4-Wheel Engine Trucks, 4-Wheel Trailer Trucks, Waterbottom Tender Frames, and 8-Wheel Tender Trucks.

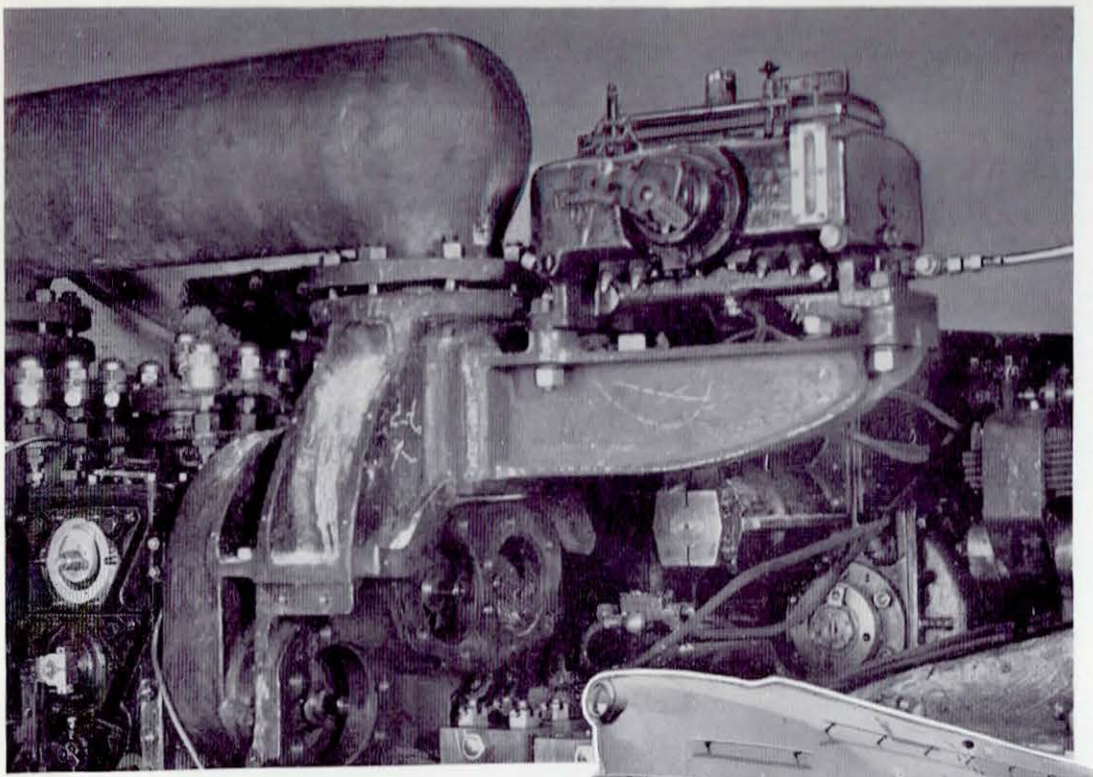
Selection of COMMONWEALTH Products for America's newest and finest locomotives is assurance of the outstanding quality and superiority of these devices—proven by their record of performance on all types of modern power.

The unit construction of COMMONWEALTH Locomotive Beds provides greater strength with less weight. Locomotives equipped with ONE-PIECE BEDS spend less time in repair shops—*give many more miles of useful, active service*—help to reduce expensive maintenance costs.

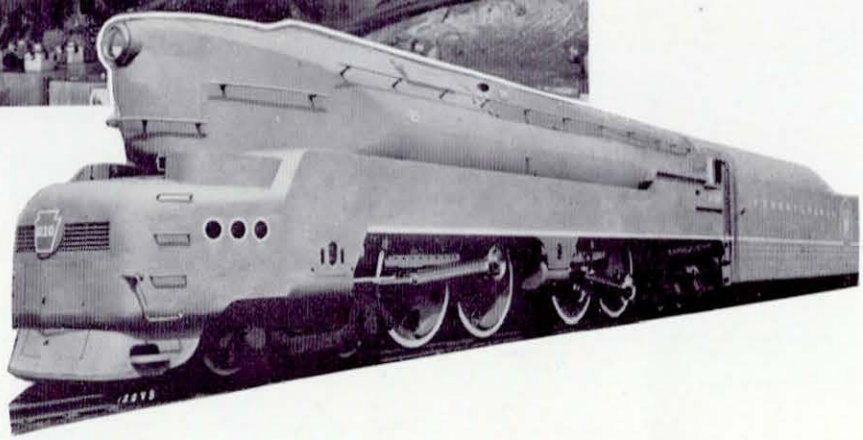
Locomotives Built by Baldwin Locomotive Works

CASTINGS

EDDYSTONE, PA.
GRANITE CITY, ILL.



Close up view of rear engine on one of the new T-1 locomotives showing Nathan Lubricator and Terminal checks.



NATHAN PRODUCTS

ON THE NEW PENNSYLVANIA LOCOMOTIVES

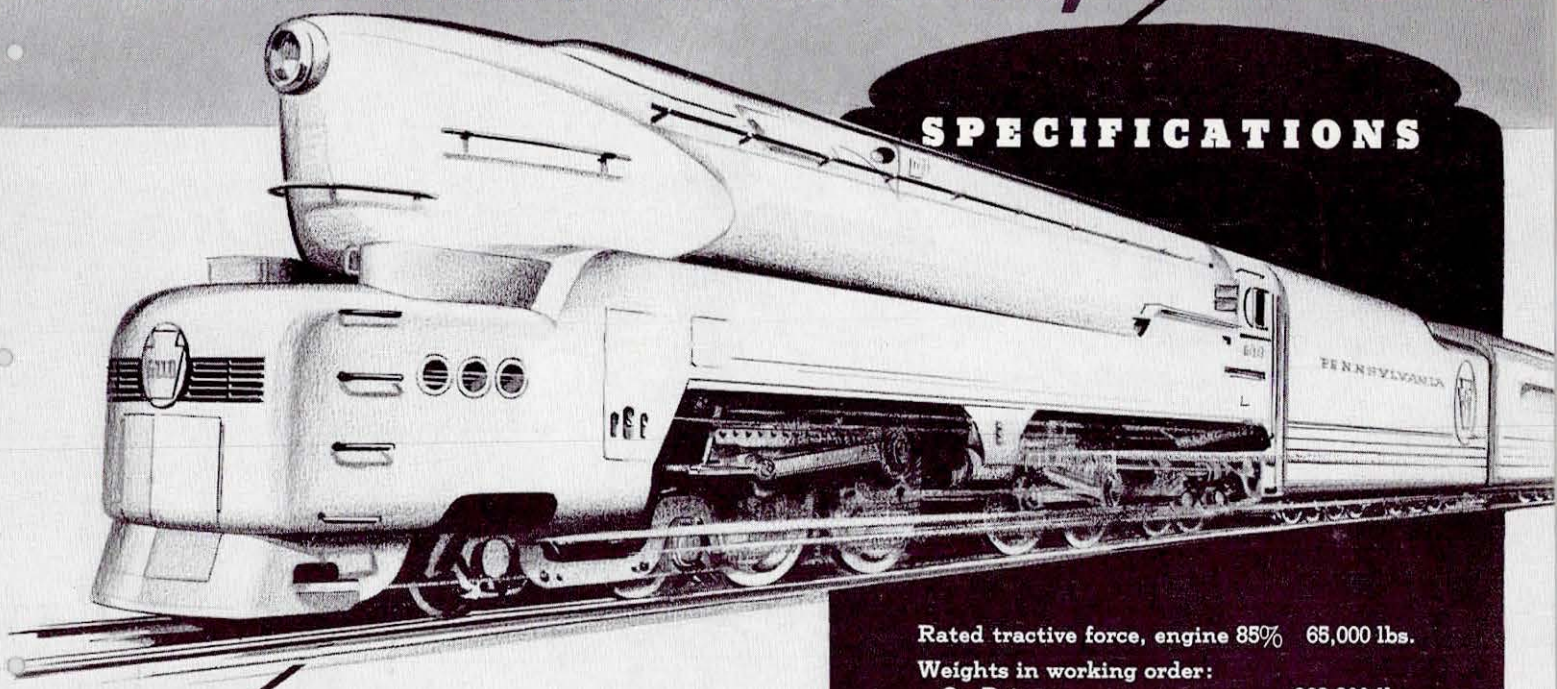
DESIGNED for speeds up to 100 m.p.h., it is obvious that the two new 4-4-4-4 type locomotives built for the Pennsylvania must be provided with dependable lubrication.

It is significant that both of these super-power passenger locomotives are equipped with NATHAN Mechanical Lubricators, Atomizers, Terminal Check Valves and Oil Distributors. The Nathan Oil Control Valve is also used for the lubrication of the booster.

The NATHAN system of locomotive lubrication is rapidly becoming standard practice on many leading railroads. This system not only includes the Valves, Cylinders, Air Pumps, feedwater heaters and boosters but also the driving wheel pedestals and other vital parts of the chassis.

NATHAN MANUFACTURING CO., 250 PARK AVE. NEW YORK, N. Y.

STANDARD STOKERS
ON
PENNSYLVANIA'S T1, 4-4-4-4



SPECIFICATIONS

Rated tractive force, engine 85%	65,000 lbs.
Weights in working order:	
On Drivers	268,200 lbs.
Total Engine	497,200 lbs.
Tender	433,000 lbs.
Total Engine and Tender	930,200 lbs.
Wheel bases:	
Driving	25′ 4″
Engine Total	51′ 11″
Engine and Tender total	107′ 0″
Driving Wheels, diameter outside tires	80″
Cylinders, number, diameter and stroke	(4) 19¾″–26″
Steam pressure	300 lbs.
Firebox length	138″
Firebox width	96″
Heating surfaces:	
Evaporative total	4,209 sq. ft.
Superheating	1,680 sq. ft.
Combined evap. and superheat	5,889 sq. ft.
Tender coal capacity	41 tons
Tender water capacity	19,500 gallons
STOKER	STANDARD HT

KEEP 'EM ROLLING AT TOP SPEED

The new Pennsylvania T1, 4-4-4-4 locomotive will haul a 900 to 1000 ton passenger train on level track at a speed of 100 m.p.h. It's Standard Stoker fired, of course, and becomes one of the more than 15,000 locomotives so equipped.

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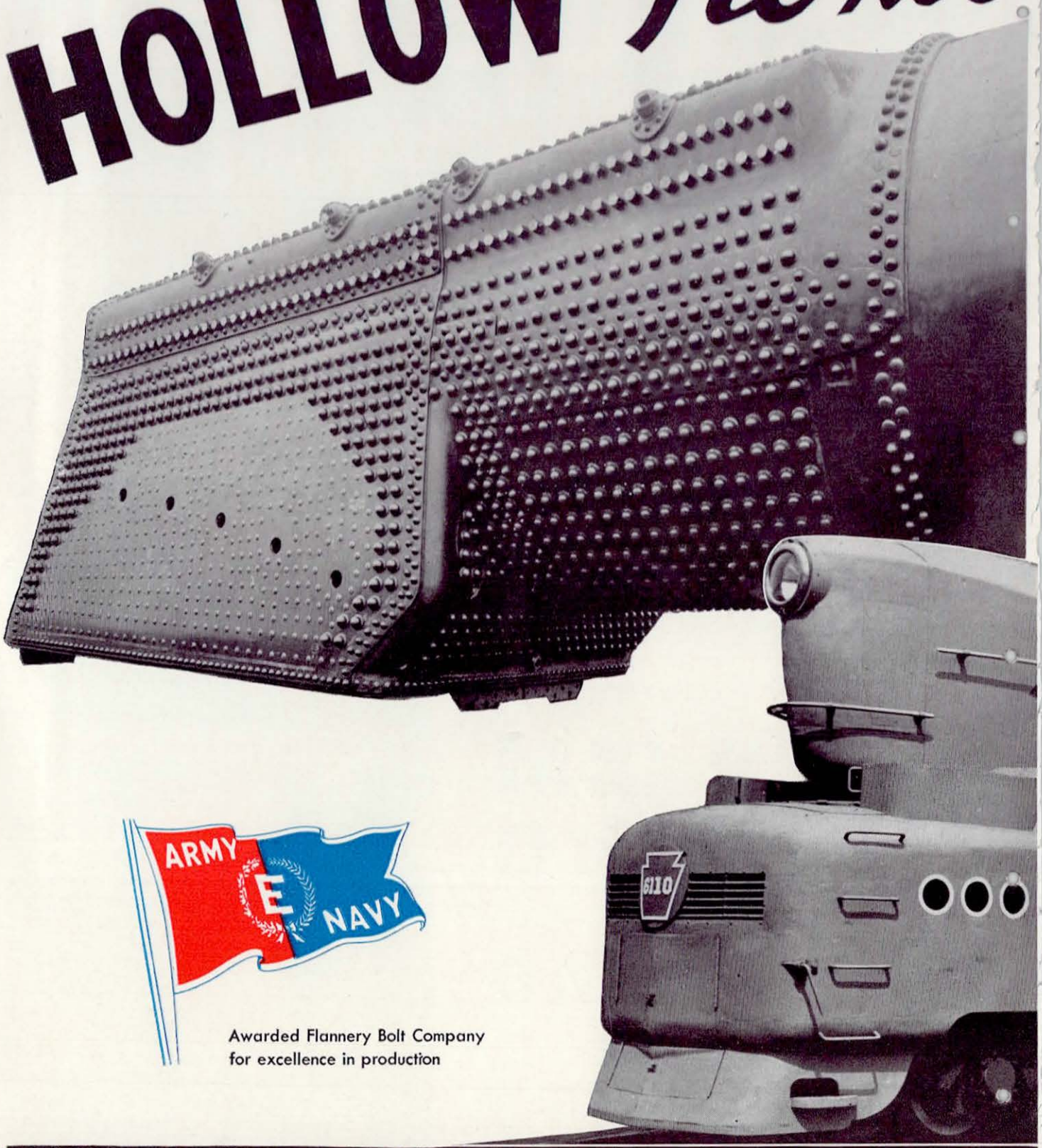

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★ FLANNERY BOLT

le STAYBOLTS

ON THE NEW PENNSYLVANIA LOCOMOTIVES

COMPANY BRIDGEVILLE PENNSYLVANIA

SAFETY
at high speeds is most important--

That's why the tenders of the new 4-4-4-4 type T-1 passenger locomotives built for the Pennsylvania Railroad by Baldwin, to maintain a speed of 100 miles an hour, are equipped with A.A.R. Tight Lock Couplers.

Two Tight Lock Couplers Coupled

A. A. R. TIGHT LOCK COUPLERS

Anti-climbing feature prevents telescoping

Eliminate slack in coupler contour

Eliminate noise caused by coupler slack

Will couple with present standard couplers, and when so coupled provides substantial reduction in contour slack.

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Meet all A.A.R. specifications

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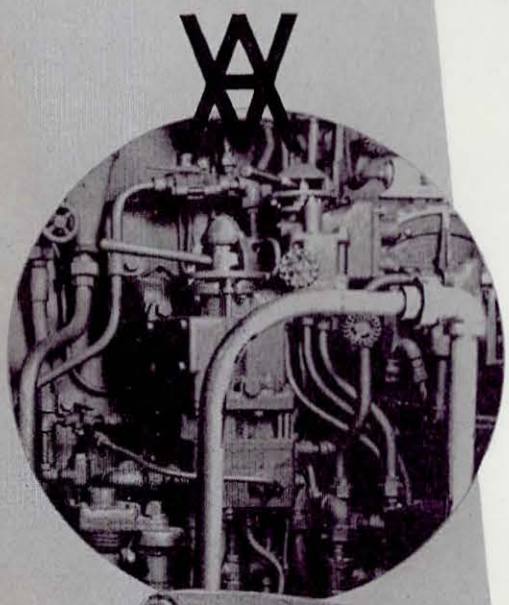
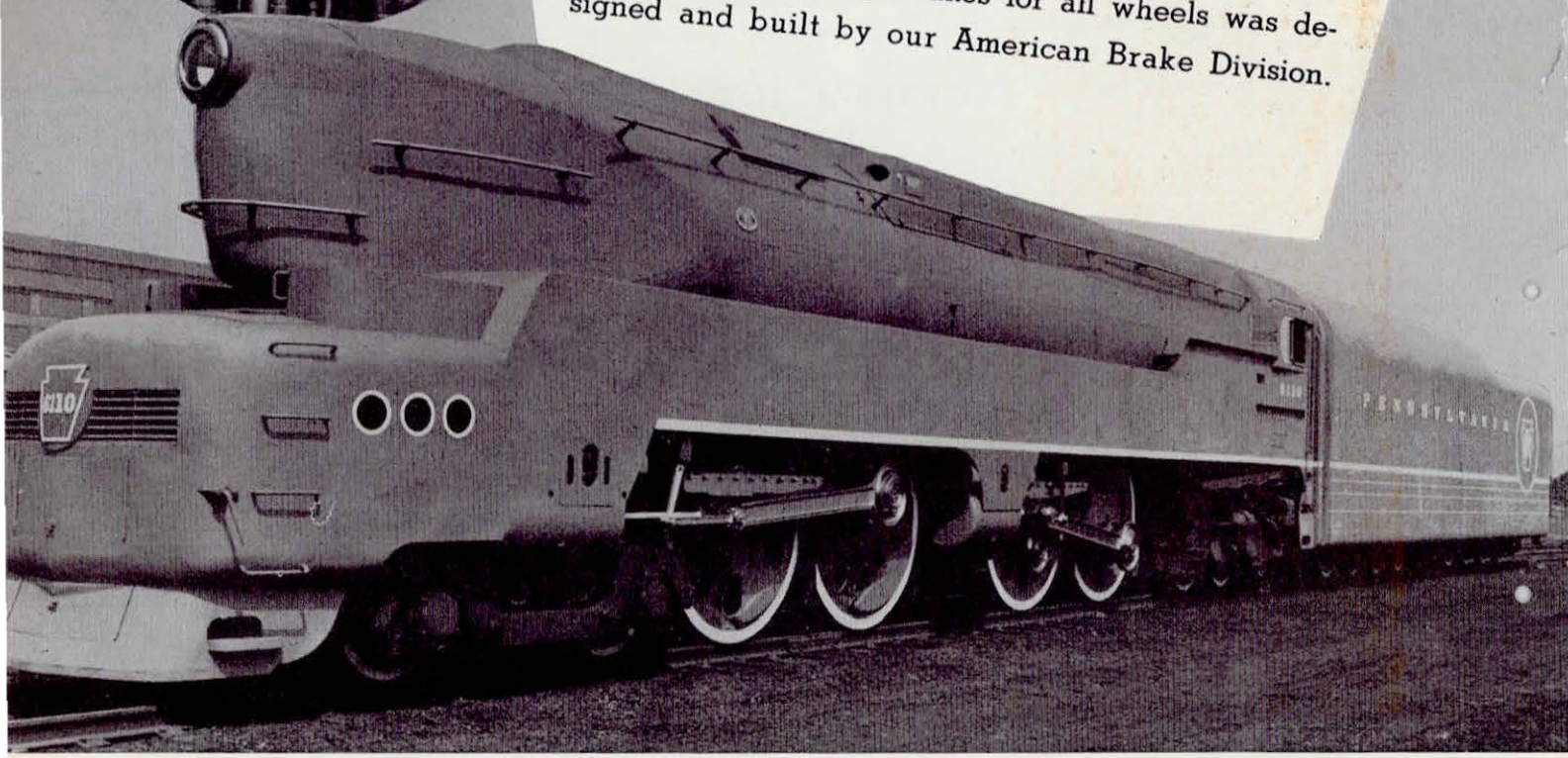
MODERN POWER

THE "HSC" Air Brake on these locomotives has all the well known distinctive operating features of the No. 8-ET Equipment, and is so arranged that supplementary devices may readily be added to provide for complete electro-pneumatic control when desired . . . It includes the latest pneumatic devices, such as the D-22 type Control Valve, and B Relay Valves that maintain brake cylinder pressure from the main reservoir on the engine, and from supply reservoirs on the tender. The independent brake valve is of the self-lapping type, providing prompt and precise control. Air Compressors are equipped with mechanical lubricators, improved inlet filters, and the after-cooler with automatic drain valve . . . An ingenious arrangement of clasp brakes for all wheels was designed and built by our American Brake Division.





WESTINGHOUSE AIR BRAKE CO.

WILMERDING, PENNSYLVANIA

The Week at a Glance

COMPETITION—GOOD OR BAD?: The railroads, after the war, are going to meet strenuous rivalry from other agencies of transportation. That they successfully meet this rivalry is requisite to the prosperity of all interests allied with the railways, including manufacturers of railway equipment and materials. The outcome of the railroads' competitive struggle depends to a large degree upon the excellence and economy of the materials with which their manufacturers supply them. How can the maximum of quality and economy in materials the railways use be secured, unless there is a healthy rivalry among these manufacturers—each vying with the other to improve its product and reduce its cost? A vital question for railroads and railway manufacturers to ponder—discussed in the leading editorial herein.

●

MERIT OR SOMETHING ELSE?: The editorial contends that competitive practices in the marketing of railway materials that have nothing to do with drawing attention to or improving the quality or economy of such products may gain a temporary advantage to a few—but to the neglect of normal technical and economic progress, of which the railroads will need all they can get in the days which lie ahead. Those who expect this industry to serve its affiliated interests, as well as the public, to their benefit for the "long pull" should be friends of sound competition; opponents of marketing practices based on considerations which have no necessary relationship to the merit of the product.

●

WPB SEEKS MORE BRANCHES: The WPB has asked the ODT for authorization to take up 415 more miles of railroad branches—provided, that is, that the ODT's examiner doesn't believe continued operation of these lines is necessary to the war program. The branches slated for possible extinction in a worthy cause are listed in the news pages herein. Testimony before a Senate committee inquiring into WPB requisitioning of these lines indicates that Mr. Eastman favors the ordinary I. C. C. abandonment proceedings for these cases—but there are instances, which he cites, where this method is not effective.

●

MECH. DEPT. LABOR: An editorial herein relates six concrete suggestions by F. K. Mitchell, assistant general s. m. p. of the New York Central, for improving the labor supply in the mechanical department. For one thing he recommends job "freezing," provision of trained supervision and sanitary facilities for women employees, and an agreement between management and unions permitting the hiring of temporary employees.

●

ODT ORDERS TRAINS OFF: The Burlington has been told (ODT Special Order R-1) to pull off a daily round-trip passenger run between Edgemont, S. D., and Billings, Mont.—which will release three engines, four baggage cars, a combination car, two coaches, three diner-lounges and two Pullmans for other service. Bus service will be substituted. By Special Order R-2 the Southern has been directed to take off a run between New Albany, Ind., and Princeton. Order R-3 doesn't suspend passenger service, but adds to it—shuttle train service by the I. G. N. and the T. & N. O. to a shipyard near Houston.

●

RIVALRY FROM AIR?: Last week we published a statement by United Air Lines President Patterson in which he made quite explicit why air transport can be no *economic* rival of the railroads for freight traffic. Herein, however, it is pointed out editorially that an analysis—similar in kind to that developed by Mr. Patterson—could be made equally to prove that the trucks could not compete with the railroads. And yet, as everybody knows, they do compete—largely by *political* methods. That is, long-haul trucks do not bear their share of the empty movement and of "fluffy" commodities. They are not required to maintain "stand-by" facilities for peak loads. These favors, combined with government-supplied roadway, have enabled them to go much further in diverting traffic from the railways than any examination of their purely economic characteristics would disclose.

●

SERIOUS BUT NOT LETHAL: When the airlines "relieve" the railroads of passenger and mail traffic, as Mr. Patterson believes they will, will the airlines also take on the railroads' "stand-by," peak-load, and all-weather responsibilities for the field of transportation they invade? Or, as has been the case with the trucks, will the airlines merely "relieve" the rail carriers of most of the revenue—leaving a major share of the expense for the railroads still to defray? Mr. Patterson's statement was generous, scientific and public-spirited—but it would be easy for the unwary unduly to conclude therefrom that there is practically nothing to worry about in prospective competition from the air. Such a conclusion would, we suspect, be as wide of the truth as that which sees the plane entirely superseding the train.

●

TWO MILLSTONES: The railroads are making about as much now—utilized to the utmost—as they ought to make year in and year out to be a healthy industry. And they need the money—and the resulting credit which persistence of such earnings would entail—in order to maintain their facilities for efficient service. So, the bureaucracy seeks to destroy these earnings—while, at the same time, it seeks to sabotage private operation in other directions (1) by denying needed materials, (2) by publishing the government-ownership report issued under the aegis of the National Resources Planning Board and (3) by an attack by the Department of Justice on rate-making procedure necessary to a regulated industry. A pretty substantial nether millstone. The upper one, of course, is the fantastic pay boost demanded by the union magnates.

A NEW 115-LB. RAIL: The Rio Grande in 1940 had an unusual type of web failure in standard 112-lb. rail, which led to stress studies which have resulted in a new section of 115 lb. which the road has designed for its own use. Walter Leaf, D. & R. G. W. research technician, tells about this investigation in an illustrated article herein. Early in the inquiry, the web was thickened slightly on subsequent rollings of the 112-lb. rail, and none of this has developed this type of failure. This was but a temporary expedient—the cause was sought, and it was found, by both photoelastic testing and strain gages, to lie in design. The suggested alternative design is described, with reasons why it is believed to meet requirements.

●

THOSE PRR 4-4-4-4'S: A steam locomotive which has service characteristics to match its powerful CG-1 electrics is what the Pennsylvania sought in engineering work extending over almost four years, and which culminated in the innovation in steam locomotives which are described in detail in an illustrated article in these pages. The locomotives are in service between Harrisburg and Chicago, and make this run with only one intermediate fuel stop. They will do 100 m. p. h. with 880 tons on level tangent. Poppet valves are used, and, because of the wheel arrangement, the engines are easy on curves. Drivers and trailer wheels have clasp brakes with flangeless brake shoes.

●

OPA DEMANDS RATE CUT: The professors in the Office of Price Administration have been smarting under the turndown they got last spring when they tried to get the freight rate increase rescinded (they having said no word against the wage increase which occasioned the rate rise)—and so now they are back again, demanding the rate slash once more, under the somewhat larger franchise to butt-in which they now enjoy. A report in the news pages herein records the steps these worthies have instituted and an editorial analyzes the economics and the ethics of their behavior.

●

STARVED FOR 10 YEARS: The railroads during a decade of the utmost discouragement maintained a system of transportation adequate, or nearly so, to the nation's present dire need. During that decade railroad earnings sunk as low as 1¼ per cent on the investment and in none of the years did it go as high as 2.6 per cent. Now that, for one year, the carriers seem likely to earn 5 per cent, the bureaucracy swoops down on them to prevent it. The nation and even the New Dealers have learned that present magnitude of railroad plant is indispensable to the national interest. If a reasonable return is not to be permitted on such investment *even in years of maximum use*, how can railroad service adequate to future national needs be secured by reliance on *private investment?* Obviously the New Dealers well know what they are doing, as an editorial herein suggests.

The Second Vital Move

on the chessboard of global war is beginning—*the offensive!* But this could not have taken place until the first move—the production of the implements of war—was well begun. Management and labor, working together, are delivering tools of war in ever increasing quantities. » » A flood of planes, ships, tanks and other mobile units is pouring from American factories. Okonite is making many of the insulated wires and cables on which they depend for power, control and communication. Even the dearth of rubber has not stopped us, because our research laboratories years ago learned how to use synthetics and other materials for insulation. » » Without the constant faith in our country's future that spurred us and hundreds of other American Industries to maintain these research laboratories—our armed forces might still be waiting for the necessary tools of Victory.

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RAILWAY AGE

Efficiency FOR VICTORY

"Reciprocal Buying"

There has been too much of wrong kinds of competition, and too much decline of right kinds of competition, among manufacturers producing for the railway market. Those studying post-war problems for the railways should, to do an adequate job, include study of these two kinds of competition. It will be imperative in the post-war period for the railways to improve their service and reduce their costs to the utmost. Right kinds of competition among manufacturers will help, wrong kinds will hinder.

A very harmful competitive practice is "reciprocal buying"—use by railways of their purchases to get traffic, and use by manufacturers of traffic to influence railway purchases. The *Railway Age* some years ago conducted against this practice a campaign which was very effective in some quarters; and the practice declined, but later fully revived. It is injurious to the railway industry as a whole and to private enterprise, because giving to large railway systems an advantage unrelated to the quality of their service, and to large manufacturers an advantage unrelated to the quality and prices of their products.

In some instances manufacturers selling to the railways have used not only their own traffic, but that of other companies. Men having no visible connection with large industries have made large incomes by using traffic they claim to control to influence railway buying. Do men really control thousands of carloads of freight shipped by companies with which they have no visible connection and which sell little or nothing to railways? If not, railways that let their purchases be influenced by these men, or manufacturers who pay them for getting business from the railways, or both, have been successfully played for suckers. If men do control so much traffic of companies with which they are not visibly connected, the means by which they control it doubtless would interest the Federal Trade Commission, which some years ago held such use of traffic an "unfair trade practice" and unlawful.

"Reciprocal buying" reduces incentive for every kind of competition which promotes progress in railroading. Why introduce a new or improve an old product if, by using your own or somebody else's traffic, you can continue profitably selling the railways your old product? The railways themselves, by using their purchases to influence traffic, and allowing traffic to influence their purchases, hinder the technological progress in the railroad industry essential to its continuance as a successful private enterprise. Because reciprocal buying gives manufacturers controlling a large traffic such a great advantage over small manufacturers, the tendency of its extensive use to build up monopolies for the railways to buy from is plain; and it is obviously not to the interest of the railways to have to buy from monopolies or virtual monopolies.

It is to the interest of the railway industry as a whole for reciprocal buying to be suppressed. It can be suppressed only by legislation or by concerted action of the railways prohibiting their traffic and purchasing departments from using it or letting it influence them. If there is ever to be such concerted railway action, probably it will have to be at a time such as the present when no railway management can have any excuse for letting its purchases be used to influence traffic, or for letting anybody's traffic influence its purchases.

Threat from the Air

The exposition by President W. A. Patterson of United Air Lines of the economic limitations of the airplane as a freight carrier (*Railway Age*, December 5, page 920) has cleared the atmosphere of transportation discussion. Unfortunately, the Patterson pronouncement, despite its soundness, might be taken by railroad people as an invitation to complacency in the face of dangerous rivalry. Actually, there is plenty for the railroads to be concerned about in this situation, despite Mr. Patterson's reassuring words.

By using figures of comparative costs, as Mr. Patterson has done, it would be possible to prove that the motor truck could not offer serious competition to the railroads; but actual experience belies this conclusion. Why? Because competition with these newer agencies of transportation is carried on more in the realm of *politics than of economics*. Not only are the trucks aided in expanding beyond the bounds of their economic superiority by being provided with roadways largely at public expense—but their *political ascendency over the railroads* has given them other advantages, enabling them to extend their operations far beyond their natural economic limitations. For instance, by the loss of traffic to trucks, the railroads have not escaped the expense attendant upon catering to this traffic. They still have to handle the bulky loads the trucks reject. They still have to absorb virtually all the empty movement which results from long-haul truck transportation. They still have to maintain "stand-by" facilities to care for peak loads and for failures of truck service to provide for all contingencies which may arise in the traffic area which trucks serve on a strictly "pick-and-choose" basis.

There is no reason to suppose that the airlines will not similarly enjoy—as things now stand—political favors enabling them to go *far beyond their natural economic limitations*, in competing with the railroads. Indeed, some aviation interests are ardently promoting the imputation to air transportation of powerful non-economic attributes—an effort which can have no other goal than procuring for their industry, through politics, more than its just deserts. Before us is an advertisement of a great airline, which features a full-page picture of a stalwart and virtuous young man in a posture of prayer, and the "copy" consists of a socialistic screed written by the Archbishop of Canterbury.

What is such an advertisement but a subtle effort to capture for the advertiser some of the affection which the reader has set aside for the Almighty, and for "social gains?" An advertisement by another airline glorifies the wonders of air (you can't live without it); and, the next thing the unwary reader knows, he is attributing to air transportation the virtues he rightly ascribes to the continuance of his breath. These are but two examples of thousands which could be cited to suggest that competition with air transportation is not likely to be circumscribed by the economic boundaries which Mr. Patterson has so candidly described.

Mr. Patterson admits that the airlines will prove strong competitors for passengers and mail—which, apparently, he believes the railroads can well afford to yield. But, to the extent that the airlines capture such traffic, are they also going to relieve the railroads of all attendant expense? Or are the railroads going to have to continue to maintain complete facilities for peak loads and "stand-by" service? In short, are the airlines going to "relieve" the railroads of "unprofitable" passengers in the same way that trucks have "relieved" them of allegedly "unprofitable" l.c.l. traffic, namely, by taking away the bulk of the revenue but leaving most of the expense for the railroads still to defray?

Rivalry from the air is a far more serious prospect than comparative economics suggests because aviation is far stronger politically than railroads are.

More Sabotaging of the Railways

The determination of the New Dealers to sabotage the railways is indicated again by the proceeding they have started demanding that the Interstate Commerce Commission make a reduction of $500 million in freight and passenger rates.

The railways, under private management, with the co-operation of shippers, have made an amazingly good record in handling a vastly increased traffic. They have thus caused disappointment and embarrassment to the New Deal enemies of private enterprise who hopefully predicted they would break down. They have been rewarded, first, by being persistently denied equipment and materials which railway management and the government's Office of Defense Transportation have agreed they require. Second, the Department of Justice started a widely publicized grand jury investigation of railway practices essential, as a practical matter, to enabling the Interstate Commerce Commission to regulate as required by the Transportation Act. Third, the President sent to Congress the National Resources Planning Board's voluminous report which ignores the unprecedented achievements of railway efficiency during the last two years and tries to demonstrate that private ownership and management can not carry on in the post-war period. And now, fourth, comes this proceeding by Economic Dictator Byrnes and Price Dictator Henderson for a general reduction of railway rates upon the grounds that present earnings are not needed and that present rates have a tendency to promote inflation.

The railway labor unions are again demanding advances in wages of hundreds of millions annually. The advances in rates made last spring were authorized because a year ago there had been made advances in wages which, due to intervention by the President him-

self, exceeded those that had been recommended by a board that the President appointed. Can Byrnes and Henderson, while demanding a reduction of rates, give *dependable* assurance that there will not again be a large advance in wages?

Railway net earnings *before taxes* in 1942 will be about $2,800 million. Total taxes will be about $1,260 million, of which about $820 million will be federal income taxes. Net operating income *after taxes* will be about $1,540 million. If the proposed $500 million reduction of freight and passenger rates had been in effect in 1942, it would have caused the federal government to get about $260 million less taxes from the railways than it will get. This would have made it necessary to increase the government debt that much more, or to have made individuals and other industries pay that much more taxes.

If the proposed $500 million reduction of rates had been in effect, net operating income this year—allowing for the smaller federal taxes—would have been made only $1,300 million, and *net income* (after both fixed charges and taxes) about $880 million—less than was earned in 1929 for handling this year a vastly greater traffic.

A reduction of rates of any given amount would be preferable to an advance in wages of an equivalent amount, because an advance in wages plainly would be inflationary. But upon what reasonable ground can it be demanded that railway net earnings shall be reduced by either advances of wages or reductions of rates when the effects would be curtailing of federal taxes needed in carrying on the war and curtailing of net income imperatively needed for carrying on railway transportation.

The railway industry suffered terrific losses during the depression due to lack of earnings, and consequent inability to acquire needed new equipment and other facilities, and even to maintain its properties. Its net earnings after taxes are still much smaller in proportion to the traffic it is handling than before the depression. Its credit was destroyed during the depression; and, consequently, it must use, and is using, the great bulk of its current net earnings for current rehabilitation of its properties essential to enabling it to bear the vastly increased war load. It needs to continue having these net earnings and to continue using them as at present to avoid going into the post-war period a debilitated industry that would hinder rather than promote the nation's post-war prosperity.

The New Dealers, in their recent report on transportation, forecasted that the railways would be unable to carry on as a private industry after the war. Their demand for a large reduction of rates is but another important evidence of their determination to break down the railways during the war, and thus make railway rehabilitation a necessary part of the New Deal program for *government* "rebuilding of America" after the war.

Mechanical Manpower

Reports indicate government plans for the creation of armed forces which ultimately will number more than nine million men. If these plans are carried out, we shall see one in each 14 persons in the total population of the United States—including men, women and children—in some branch of military service. Eliminating children under 15 and elderly persons over 64, this will mean a civilian population of fewer than ten for each man in the fighting forces, of which not more than five will be men. How large a producing population will be required to keep armed forces of such gigantic size in the field is a question to which it is probable that no one in the United States today can give a definite answer. The ratios above, however, are significant of the fact that we are undoubtedly going to be as short of manpower as we are now of numerous critical materials.

The discussion of manpower problems as they affect the maintenance of motive power and rolling stock at the sessions sponsored by the Railroad Division at the recent annual meeting of the American Society of Mechanical Engineers was timely and brought forth a number of constructive suggestions for action both by the railroads and by government. Particularly worthy of attention are the six-point program presented by F. K. Mitchell, assistant general superintendent motive power and rolling stock, New York Central, and the report of Dorothy Sells, assistant chief, Personnel Section, Office of Defense Transportation, on the extent to which British railways have been able to alleviate the manpower shortage by the employment of women. In brief, Mr. Mitchell recommends:

(1) Allocation of deferment for regular, helper and special apprentices to railroads on the basis of ratios set up by a joint committee representing the various interests involved;

(2) State legislation eliminating the inhibition against hiring men between the ages of 16 and 18, where necessary;

(3) Job "freezing" in critical industries, including the railroad industry;

(4) A management-labor agreement permitting the hiring of "temporary" or "emergency" employees and settling the seniority status of such employees;

(5) Prompt provision of trained supervision for female employees and adequate facilities for their comfort and toilet needs;

(6) A continued effort toward further efficiency in machinery, methods, devices, work load planning, safety, health, training, personnel records, and cooperation between management, labor, and governmental agencies.

Considering the military program ahead of us, this is a minimum program.

Mr. Mitchell's paper and other parts of the discussion at the A. S. M. E. railroad sessions will be dealt with at greater length in next week's issue.

Pennsylvania 4-4-4-4 Locomotives

Two streamlined passenger units, of T-1 class, were designed to handle 880-ton trains at 100 m.p.h. with one fuel stop, over 713-mile Harrisburg-Chicago run

THE entrance into the service of the Pennsylvania, in the early summer of 1942, of two 4-4-4-4 type high-speed streamlined passenger locomotives marked the culmination of almost four years of engineering effort directed toward the ultimate objective of the development of a steam locomotive having service characteristics similar to the Pennsylvania GG-1 electrics.

These two locomotives built by The Baldwin Locomotive Works, known as the T-1 class and bearing road numbers 6110-6111 are now being used in mainline service between Harrisburg, Pa., and Chicago. They are designed to cover this territory with only one stop for fuel and to have capacity to handle an 880-ton trailing load on level tangent track at 100 m. p. h.

The T-1 Class has the general characteristics of the 6-4-4-6 locomotive exhibited at the New York World's Fair, with the important advantage that they can be operated in any main-line territory of the Pennsylvania. The order for these locomotives was placed in July, 1940, and they were completed in April and May, 1942. The tractive force of the locomotives is 65,000 lb. plus 13,500 lb. for the booster with which one of the two units is equipped. They have a driving-wheel base of 25 ft. 4 in. and a total engine and tender wheel base of 107 ft. 0 in.

These locomotives have a nominal capacity equivalent to a 4-8-4 but the 4-4-4-4 wheel arrangement permits the use of small cylinders with reduced piston loads, lighter machinery parts and lower piston speed. While the wheel base is long, lateral motion devices on the first and third drivers permit 15-deg. curves to be traversed.

Outstanding features of the design are the steam distribution system using poppet valves and the development of a clasp brake on the drivers and the trailer truck which embrace the use of flangeless brake shoes and which results in the elimination of hitherto objectionable unbalanced forces. Coincident with the demand for high capacity for long-run operation within definite wheelbase limits is the necessity for weight reduction in running-gear parts which has been solved by the use of alloy steel of special characteristics.

The Boiler and Appurtenances

The boiler is the straight top type with a modified Belpaire firebox. The overall length is 50 ft. $1\frac{1}{16}$ in. and the maximum width over firebox sheets is 9 ft. $\frac{1}{16}$ in. The width at the top of the firebox tapers from 84 in. at the back to 92 in. at the front, over the combustion chamber. The first course is $89\frac{3}{4}$ in. inside and the second course increases from $91\frac{1}{2}$ in. to 100 in. outside. The firebox is 138 in. long, 96 in. wide and the combustion chamber is 96 in. long.

The shell-course sheets are $\frac{7}{8}$ in., $\frac{15}{16}$ in. and $\frac{31}{32}$ in., and the firebox and combustion chamber sheets vary in thickness from $\frac{13}{32}$ in. to $\frac{19}{32}$ in. Nickel steel was used for the shell, welt strips, top wrappers, back head, dome and front tube sheets.

Flexible staybolts are applied in the breaking zones of the firebox, in two boundary rows of the side sheets and back head, in the throat sheet, and in the combustion chamber below the crown sheet. Four rows of expansion stays are used at the front of the combustion

chamber. Rigid water-space stays and transverse stays for the Belpaire firebox complete the installation.

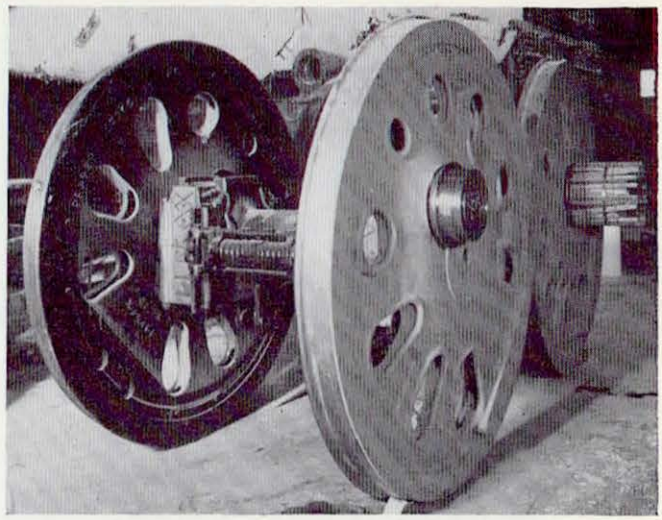
The construction of the boiler involved the use of welding in several places. The firebox and wrapper sheets are riveted and welded to the mud ring; the wrapper is seal welded to the back head; the door sheet is welded to the firebox side sheets and the crown is welded to the side sheets.

The firebox has five seamless-steel circulators supporting a brick arch. The vertical legs of the circulators enter the crown on the center line of the boiler and the horizontal legs enter the side sheets in locations sloping from back to front. The superheater is the Type AS with 138 units of the sine-wave type. Water is fed by means of a Sellers Type E injector on the left side and a Hancock Type 7-A-2 turbo feedwater heater on the right side, each of 13,000 gal. per hour capacity. The railroad company's standard grates, with 15 per cent air openings, are used and coal is fed by a Standard HT stoker.

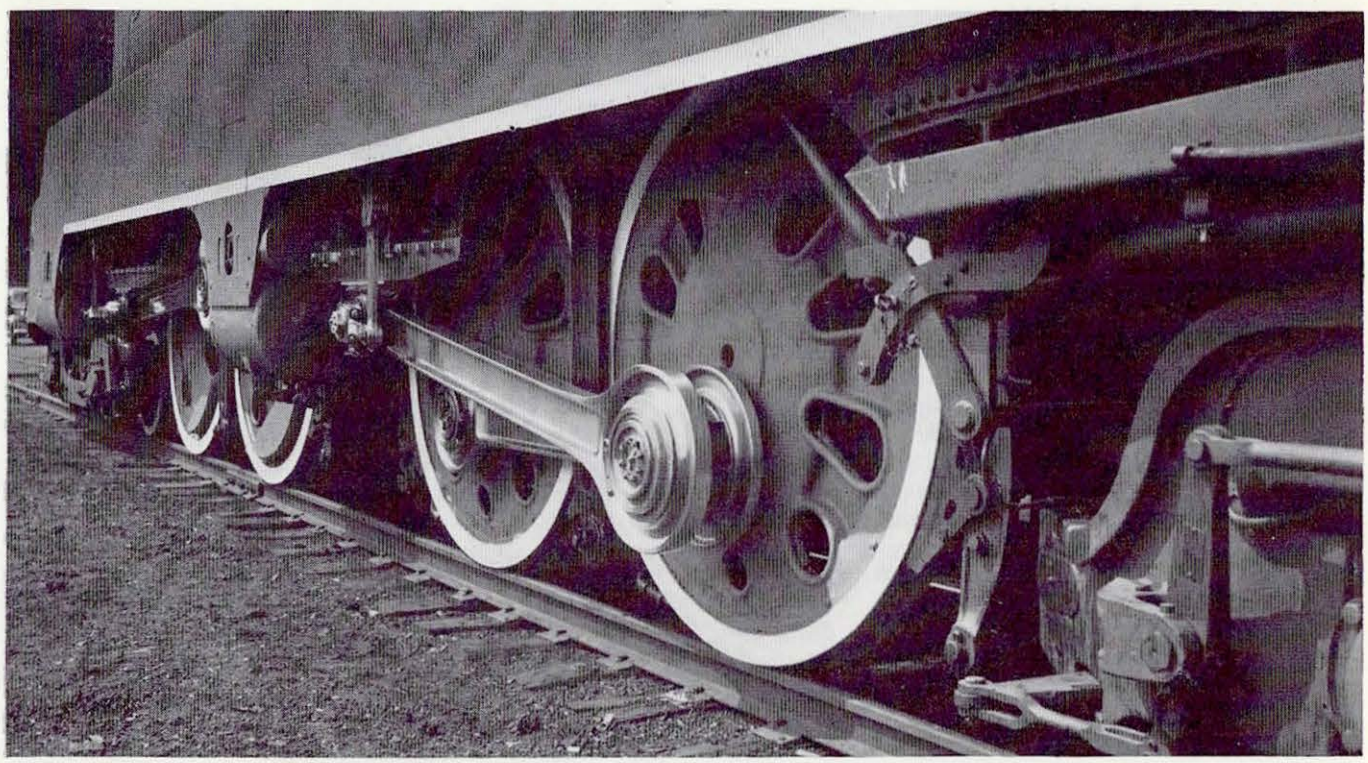
While this locomotive consists of front and rear en-

General Dimensions and Weights of the Pennsylvania T-1 Class Locomotives

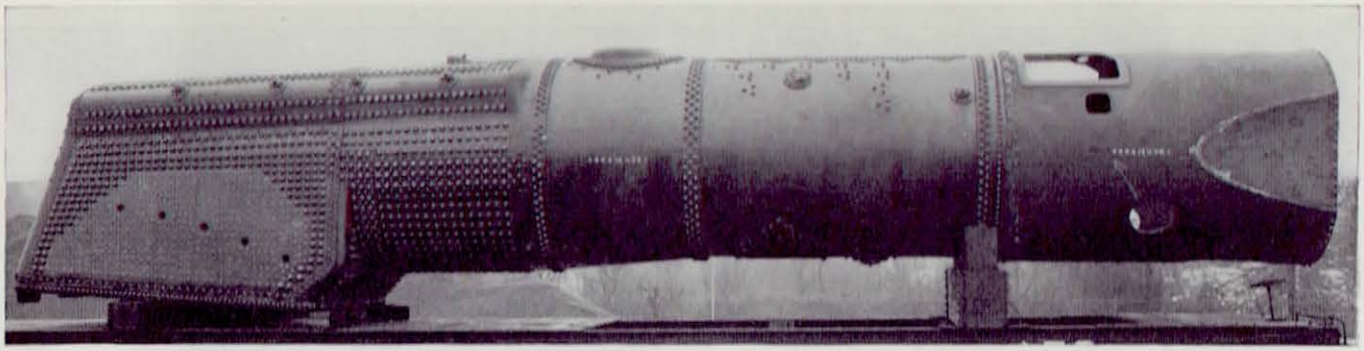
Railroad	Pennsylvania	
Builder	Baldwin Locomotive Works	
Type of locomotive	4-4-4-4	
Road class	T-1	
Road numbers	6110—6111	
Date built	May, 1942	
Service	Passenger	
Rated tractive force, engine, 85 per cent, lb.	65,000	
Rated tractive force of booster, lb.	13,500	
Weights in working order, lb.:	(without booster)	(with booster)
On drivers	268,200	267,840
On front truck	100,200	102,360
On trailing truck	128,800	138,200
Total engine	497,200	508,400
Tender (fully loaded)	433,000	433,000
Wheel bases, ft.-in.:		
Driving	25— 4	
Rigid	18— 5	
Engine total	51—11	
Engine and tender total	107— 0	
Driving wheels, diameter outside tires, in.	80	
Cylinders, number, diameter and stroke, in.	4—19¾ x 26	
Valve gear, type	Franklin	
Valves, poppet:		
Intake, number and diameter, in.	16—5	
Exhaust, number and diameter, in.	16—6	
Maximum lift, intake, in.	1	
Maximum lift, exhaust, in.	¾	
Cut-off in full gear, per cent	75	
Boiler:		
Steam pressure, lb. per sq. in.	300	
Diameter, first ring, inside, in.	89¾	
Firebox length, in.	138	
Firebox width, in.	96	
Combustion chamber length, in.	96	
Circulators, number	5	
Tubes, number and diameter, in.	184—2¼	
Flues, number and diameter, in.	69—5½	
Length over tube sheets, ft.-in.	18—0	
Grate area, sq. ft.	92	
Fuel	Bituminous coal	
Heating surfaces, sq. ft.:		
Firebox and comb. chamber	419	
Firebox, total	499	
Tubes and flues	3,719	
Evaporative, total	4,218	
Superheating	1,680	
Combined evap. and superheat	5,898	
Tender:		
Style	Rectangular U	
Water capacity, U. S. gal.	19,500	
Fuel capacity, tons	41	
Trucks	eight-wheel	



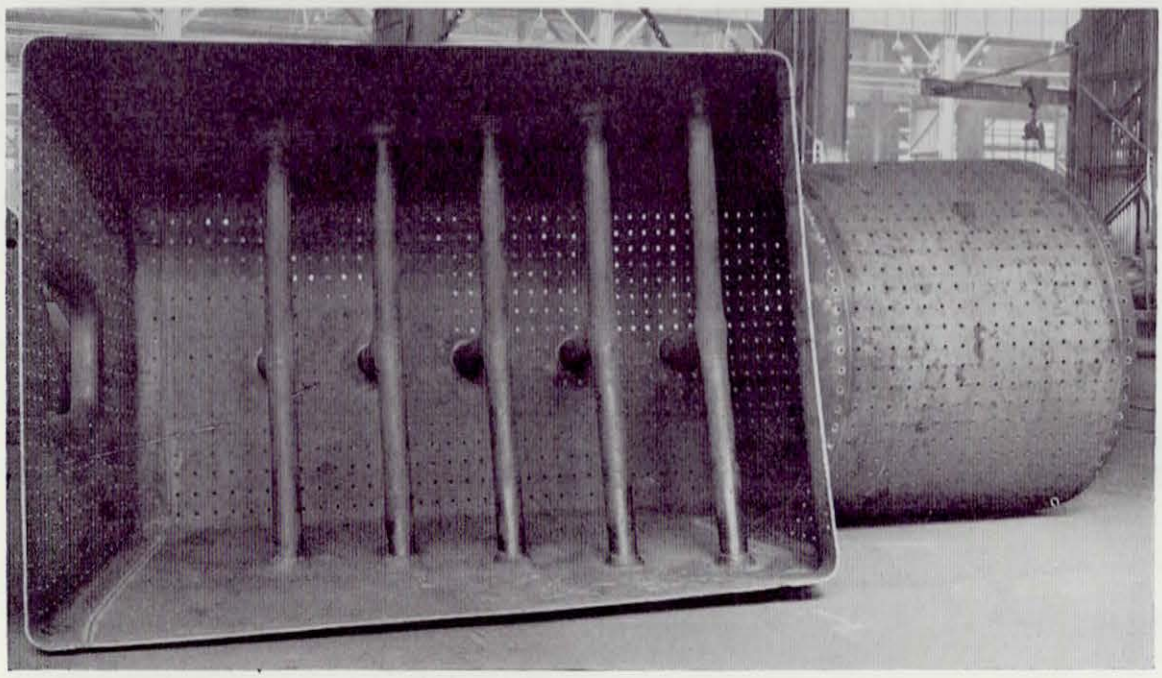
A Driving Wheel Set with Roller Bearings



The Running Gear, Showing Roller-Bearing Rods and Crossheads



One of the Completed Boilers



Assembled Firebox and Combustion Chamber, Showing Location of the Circulators

gines, it is not of the articulated type. This simplifies the steam and exhaust piping to the extent of eliminating ball joints. The steam pipes are designed to be free of restriction as to capacity. The dry pipe to the header is 10½ in. diameter inside with 9½ in. pipes inside the smokebox from the multiple throttle to a tee in each of the outside steam pipes, which are 7 in. These pipes, located longitudinally underneath the boiler, connects the manifolds at the cylinders, which serve the steam chests containing the poppet valves. Expansion joints are located in the pipes between the manifolds. The exhaust from the front cylinders passes through ports in the saddle to the front part of the double exhaust nozzle and companion ports in the front cylinder saddle receive the exhaust steam from a central exhaust line from the rear cylinders and transmit it to the rear exhaust nozzle. From there the steam passes out through a double stack with two 19-in. openings. The stack is welded to the smokebox. The feedwater heater takes exhaust steam from the rear engine unit.

The front end arrangement is of Pennsylvania standard design and is similar to that of the Class S1 locomotive No. 6100.

The Franklin system of steam distribution, applied to these locomotives, consists of four major units. These are the cylinders and related parts, the cam boxes, the gear boxes—one for each engine—and the power reverse gear. Except for the peculiar problems of application with respect to these four-cylinder locomotives, the equipment is like that used on Pennsylvania locomotive No. 5399 which was described in detail in previous articles.*

Each of the four cylinders has a steam chest at each end of the barrel and each steam chest contains two inlet and two exhaust valves of the horizontal double seated type. The exhaust valves are located nearest the cylinder barrel.

The eight valves of each cylinder are operated through a cam box located in the space between the steam chests. Each cam box contains two cam shafts, each of which carries two identical cams. Intermediate levers in the cam box with rollers bearing against opposite sides of these cams, actuate front and back pairs of inlet and exhaust valves. The cam shafts receive their motion through cranks and connecting rods from gear boxes

* For a description of the O. C. poppet valve gear and its development see the *Railway Age* for June 17, 1939, page 1019, "Poppet Valve Gear for Steam Locomotives in America." For the road tests of the poppet valve installation on Pennsylvania locomotive 5399 see the article in the *Railway Age* of March 1, 1941, page 375, entitled "Poppet Valves Tested on the Pennsylvania Railroad." For a description of the changes in the locomotive and the subsequent tests on the Altoona test plant, see the article in the *Railway Age* of March 8, 1941, page 405, entitled "Poppet Valves Prove Capacity on P. R. R. Test Plant at Altoona."

which are located on the center line of the locomotive.

The gear box contains the valve motion and reverse mechanism consisting of four independent link motions, one intake and one exhaust motion for each side of the engine. The principle of the valve motion is similar to that of a Walschaert gear except that the links are not driven from an eccentric crank but from the crosshead of the opposite side. This motion is imparted by a connection to the engine crosshead from each side of the gear box. The links are inside the gear box and the link "blocks" (rollers in this case) are moved in the slot through a mechanism controlled by the power reverse gear.

The reversing mechanism requires but little power. Furthermore, all reactions from the link blocks are absorbed by reach-rod screws located within the gear box. Therefore, power is needed only for reversing, and not for holding the gear in a certain cut-off.

In view of these facts, and to comply with the law, a small power reverse gear has been designed to operate the operating mechanism. This reverse gear is located entirely within the cab and is connected to the gear box by rotating connecting shafts equipped with universal joints. Expansion joints incorporated in the universal joints allow the shafts to expand or to contract in length.

Air-Operated Reverse Gear

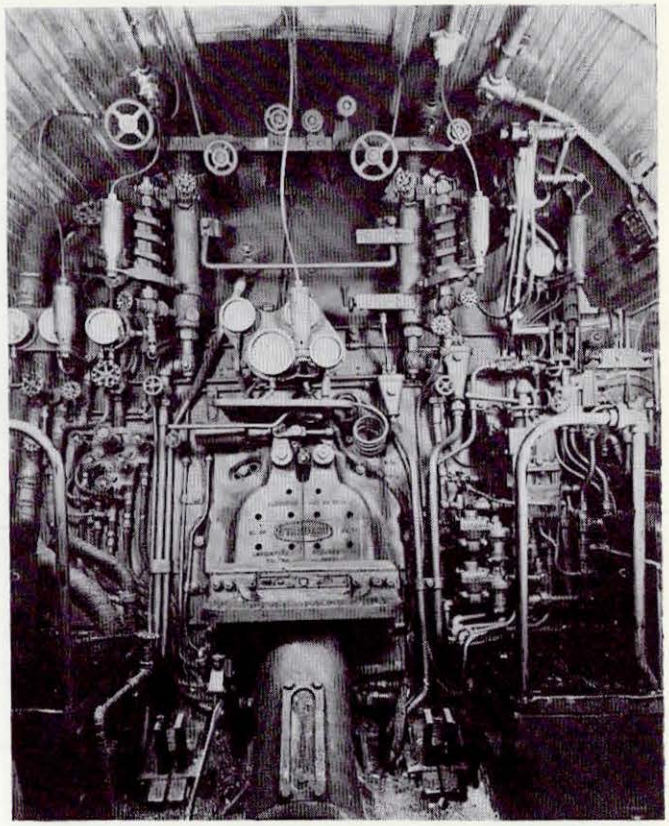
The power reverse gear is operated by a small air motor controlled by a valve and hand lever. An indicator shows the cut-off positions for forward and backward gear. The air motor is equipped with a bevel gear driving another bevel gear keyed to the reversing screw shaft. At the front the screw shaft connects to the reverse connecting shaft leading to the gear box through bevel gears and universal joints.

The above is a general description of the several units of the steam distribution system. On these locomotives the application of the several units involved some interesting problems brought about by clearance limitations within the running gear. The gear boxes, located on the center line of the engine, are located directly ahead of or behind the cylinder. In the case of the front engine the gear box is mounted, in a horizontal position, ahead of the front cylinders. The motion of each engine crosshead—right and left side—is imparted to a transverse shaft by links and lever arms and, in turn, to the cranks on the gear box by other connecting rods. The screw shaft of the gear box receives the rotary motion from the reverse gear shaft through a connection at the rear end of the gear box.

The gear box for the rear engine is identical in design to that of the front engine gear box but is mounted vertically against the back surface of the rear engine cylinders. The driving mechanism from engine crosshead to gear box is similar in principle though different in arrangement due to location problems. The screw shaft of this gear box is connected to the rotating shaft from the power reverse gear at the top of the box.

The Running Gear

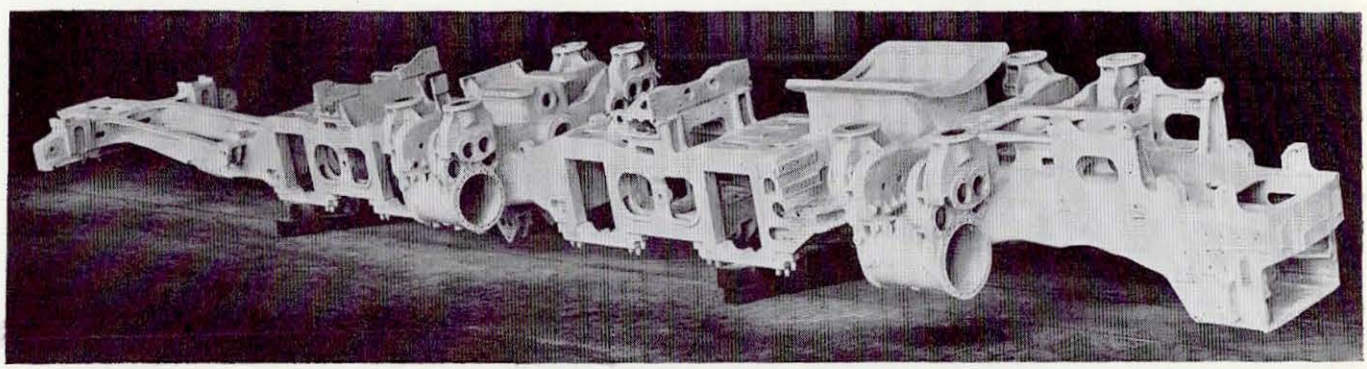
The engine bed is a steel casting supplied by General Steel Castings Corporation which embraces the four cylinders, back heads, cross members, spring equalizer



The Controls in the Cab Are Readily Accessible

supports, brake-hanger brackets and various other attachments, all cast integral. The leading and trailing truck frames are also steel castings. The boiler is rigidly secured to the front cylinder saddle. At the rear cylinders and at the firebox lubricated sliding shoes take care of expansion and contraction.

The driving wheels are the Baldwin disc type with



The Bed, for Both Front and Rear Engines, Is a Single Casting

flanged tires on all drivers. The Alco lateral motion device, allowing 2 in. total lateral play is used on the first and third pairs of drivers. The resistance against lateral movement at No. 1 wheel is 17 per cent and at No. 3 wheel 10 per cent. The wheels are mounted on open-hearth carbon-steel axles, hollow bored. Timken roller bearings are used on all engine and trailing truck and driving wheels.

The driving axles measure 11½ in. in diameter at the roller seat.

The spring rigging is a continuous equalization system for each side of the locomotive from No. 1 driver through the trailer truck. The spring hangers have ball seats on the end clips and roller pins at the lower ends. A coil spring snubber is used back of the rear trailer wheels.

In the design of the revolving and reciprocating parts weight reduction was a major consideration. To this end the pistons, crosshead forgings and the main and side rods are of Timken light-weight design and high-dynamic steel. Timken roller bearings are also installed on the crank pins and crosshead pins. The piston rods are hollow-forged, 4½ in. diameter. The crossheads are the Pennsylvania underhung design operating in multiple-ledge guides. The crank pins are Timken steel with hollow bored main pins. The left-hand cranks lead, in accordance with Pennsylvania practice.

Some indication of the influence of the small cylinder size on the design of reciprocating parts may be seen in the fact that these parts weigh only 1,992 lb. for one side of the locomotive—1,041 lb. for the front unit and 951 lb. for the rear unit. The weight difference between the front and back units is accounted for principally by a difference in piston-rod length.

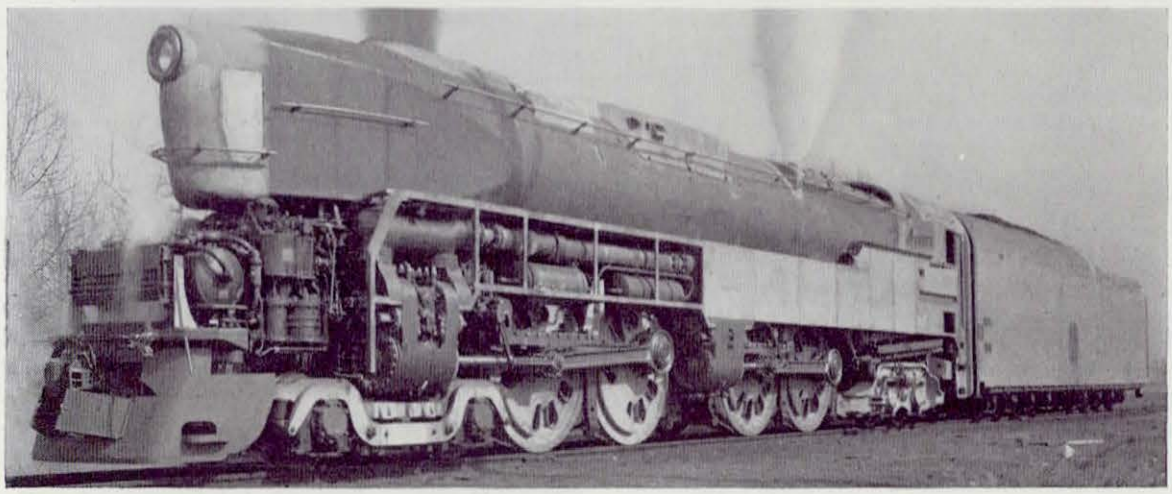
The main crank-pin arrangement is the first roller-bearing application made to a four-coupled engine. This application differs from previous crank-pin applications in that separate bearings are used under the main and side rods. The main crack pin assembly is so designed that the rods may be removed without disturbing the assembly of the bearings on the crank pins. All enclosures on both main and front crank-pin assemblies are held in place by means of snap rings, thereby eliminating the use of cap screws or bolts. Both main and side rods are mounted on the bearing cups, or outer races and the lateral rod clearance totaling ⅛ in., together with the normal clearance between rod bores and bearing cups, allows for adjustment to the 2-in. total lateral of the first and third drivers. The lateral at the second and fourth drivers is ¼ in. in each direction, or a total of ½ in.

The arrangement of the driving-wheel roller bearings involves the use of a single row of rollers at each end of the housing. Special lugs are cast on the bottom of these housings to keep the movement of the braking parts in proper relation to the lateral movement of the wheels and axles.

The frame shoes on the driver application are the bronze insert type by means of which the fore and aft clearance of the housing within the pedestals may be adjusted by shimming.

The leading engine truck is the constant-resistance type with outside journals and roller bearings and the trailing truck is the Delta type, also equipped with roller bearings. Both trucks have heat-treated rolled-steel wheels 36 in. diameter on the front truck and 42 in. on the rear truck.

An interesting feature of the trailer truck is the reduction of 10 in. in wheel centers as a result of the clasp-brake arrangement described elsewhere. This, together with alloy castings permitting thinner sections, resulted in a truck weighing only 30,784 lb. Both trucks were furnished by General Steel Castings Corporation. The Franklin booster is applied to the rear truck of one locomotive and the other locomotive is designed for such application.

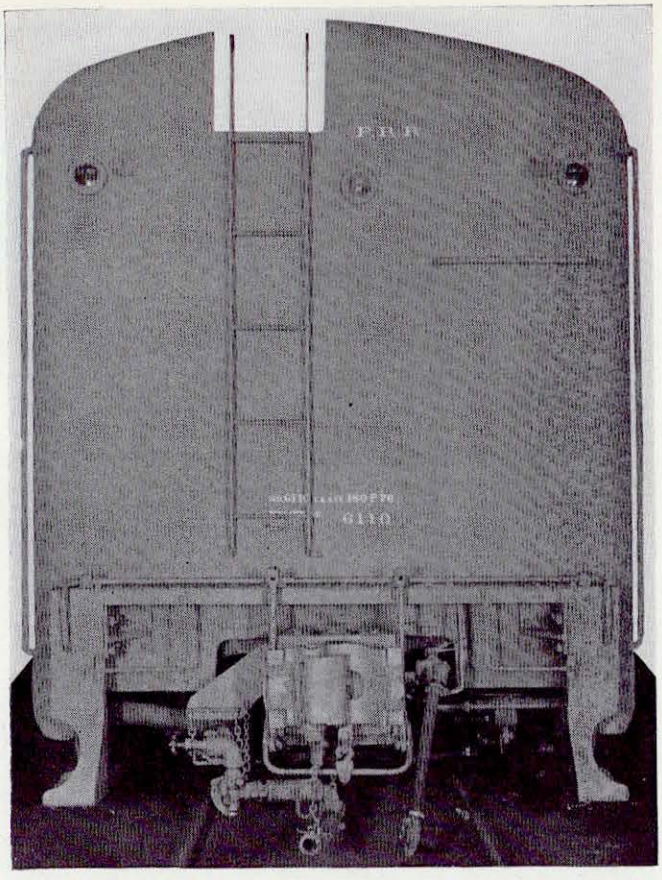


Locomotive, with Part of Sheathing Removed While Undergoing Tests, Showing Arrangement of Cylinders, Steam Pipes, Air Compressors and Air Reservoirs

Brake Equipment

In the design of the foundation brake rigging for this locomotive, it was necessary to use clasp-brake rigging on all units in order to avoid excessive brake-shoe pressures per square inch of shoe surface.

On the engine truck this was a comparatively simple matter, as a conventional type of clasp brake was readily applicable. In the case of the driver brake, however, so little space had been provided between the first and second, and third and fourth pairs of drivers that there was practically no clearance between treads of adjacent wheels at these points, and no room between adjacent



Coupler and Connectors at the Rear of the Tender

wheel treads and rail for the two sets of heads and shoes usually located in this space on conventional clasp brake designs. Accordingly, it became necessary, at each of these close points to locate one head and shoe above the center line of the wheel and the adjacent head and shoe of the adjoining wheel below the center line, both shoes being actuated by a single four-point lever, the middle portion of which cleared the outside faces of the drivers. Each of these levers was moved, during brake applications, by two brake beams, one at the top and the other at the bottom, which were then forced in opposite directions by two different sets of brake cylinders. The levers, shoes, heads, and beams were all supported by frame wearing plates above and below the upper brake beam.

Further driver brake complications were necessary because of a 1-in. lateral movement, each side of the center line, in the first and third pairs of drivers. This required guiding members hinged at the top and bottom of the bearing housings to insure that the brake shoes followed the wheels in their lateral movements. It also required the use of a heavy pull rod with a swiveling jaw; and double-swing suspension of the transmitting and hanger levers at the drivers having lateral movement. This last provision introduced additional special construction in the top and bottom bearings of the four-point levers, as it became necessary to mount the beam journals in blocks having flat vertical faces but rounded top and bottom surfaces, thus allowing swing in a vertical plane, but not in a horizontal plane.

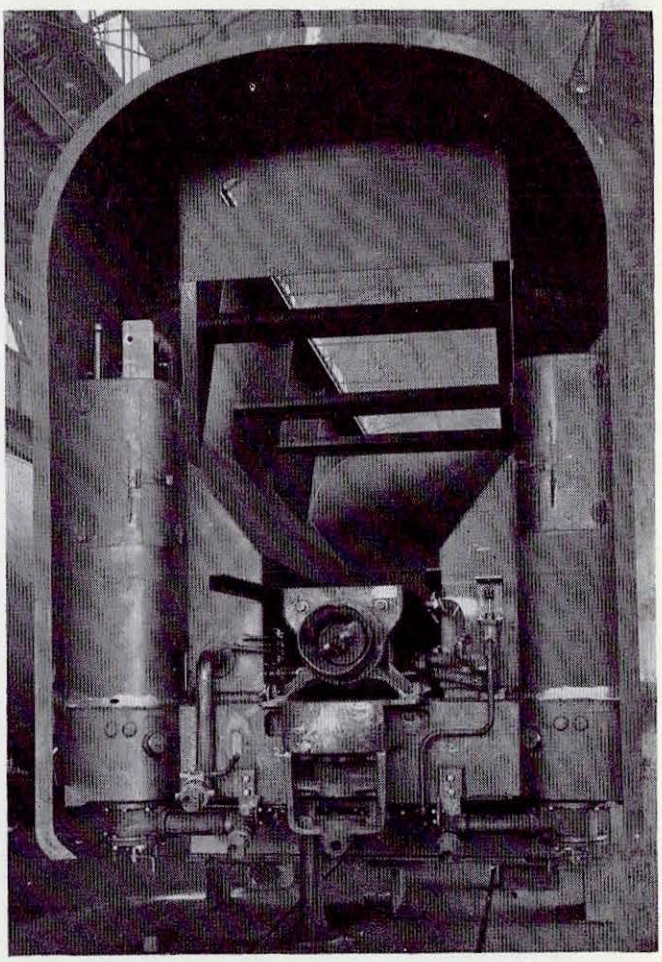
The trailer clasp brake arrangement was somewhat simpler, owing to greater clearance between the adjacent wheels. It was still necessary to hang one of the adjacent head and shoe combinations above the center, but it was then possible to apply the scissors type of twin lever, in which pressure at one end of the member applies equal pressure to both shoes.

The locomotive and tender brake equipment is Westinghouse HSC of the same type as on the S-1 locomotive except that it does not have electro-pneumatic speed control. Train air is supplied by two 8½-in. cross-compound compressors located at the front end of the frame behind the intercooler. The brake equipment is designed for 95 lb. emergency application. The braking power at 50 lb. cylinder pressure is 60 per cent on both engine trucks, 80 per cent on drivers and 120 per cent of empty tender weight. The train signal equipment is Westinghouse Type C.

The mechanical lubrication system consists of four Nathan DV-7 lubricators. Two of these are 16-feed units, one each for the poppet valves of front and rear engines. Eight feeds of each unit are for inlet valve stems and the other eight for exhaust valve stems. The internal mechanisms of gear and cam boxes operate in oil baths.

The other two mechanical units serve the cylinders, guides, booster (on the locomotive so equipped), stoker, exhaust-pipe expansion joint, sliding boiler supports, journal housing shoes and throttle stem. Alemite fittings for grease, in numerous locations on the chassis, complete the lubrication system.

One of the railroad company's requirements for these locomotives was that they should be able to operate over the 713-mile territory between Harrisburg and Chicago with only one fuel stop. This is responsible for the unusually large fuel capacity of 41 tons. Water is taken from track pans while running by means of an air-



The Front End of the Tender

operated water scoop so that the tender tank capacity need be only 19,500 gallons.

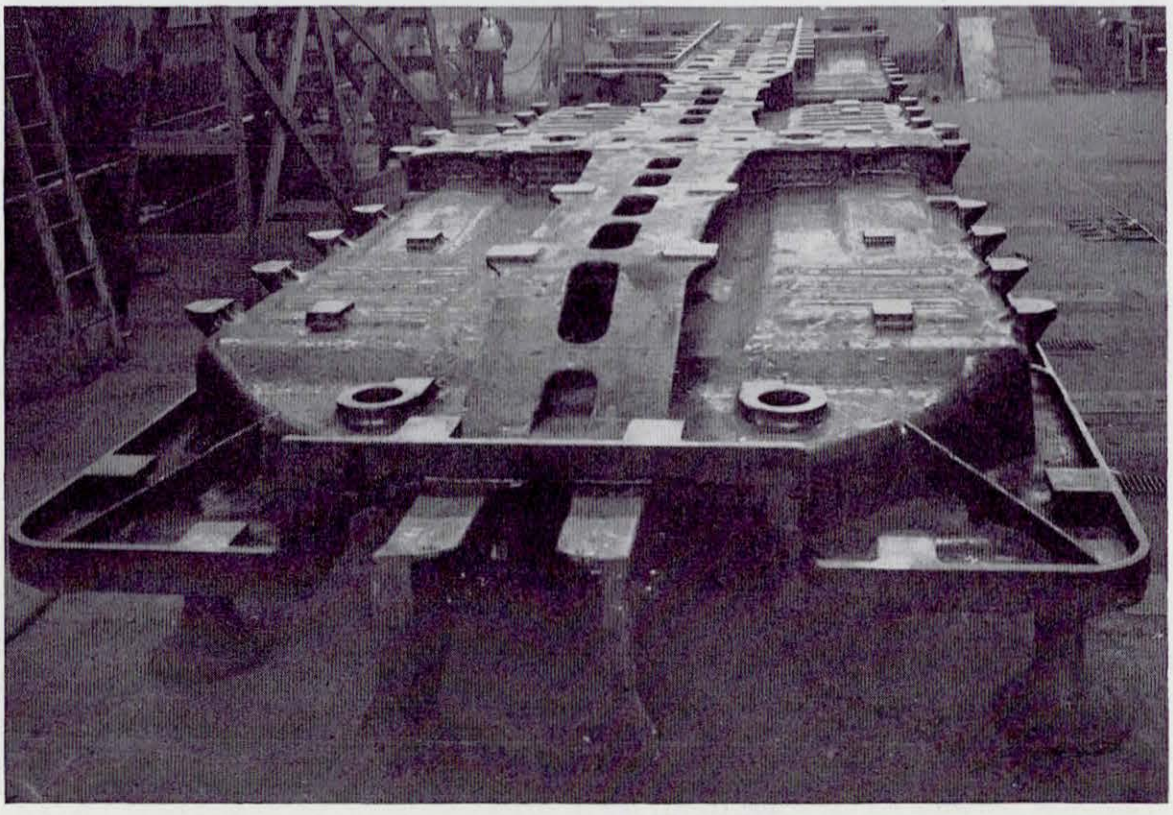
The rectangular U tank is mounted on a General Steel Castings Corporation cast-steel underframe in which provision is made for the stoker engine. The unusually large coal capacity necessitates the use of an exceptionally long stoker trough and conveyor screw.

The tender is carried on two General Steel Castings eight-wheel trucks. The trucks are equipped with Timken roller bearings.

Barco flexible connections are used between the engine and tender. Vapor steam-heat connectors are used at the rear of the tender. The tenders are equipped with National tight-lock couplers and Waugh draft gear.

Partial List of Material and Equipment on the Pennsylvania T-1 Class Locomotive

Locomotive bed with cylinders; engine and trailer trucks; trailer-truck centering device	General Steel Castings Corp., Eddystone, Pa.
Engine-truck and trailer-truck wheels; driving tires; trailer springs (one engine); trailer truck springs; driving-wheel centers	Standard Steel Works Division of the Baldwin Locomotive Works, Eddystone, Pa.
Driving-box roller bearings; engine and trailer-box roller bearings	The Timken Roller Bearing Co., Canton, Ohio.
Springs—driving and engine truck	American Locomotive Co., Railway Steel Spring Div., New York.
Brake shoes	American Brake Shoe & Foundry Co., New York.
Driver and truck brake; locomotive and tender brake equipment	American Brake Div., Westinghouse Air Brake Co., Wilmerding, Pa.
Train-signal equipment	Westinghouse Air Brake Co., Wilmerding, Pa.
Pistons; piston rods; crosshead; connecting rods; crank pins	The Timken Roller Bearing Co., Canton, Ohio.
Sectional piston rings	Locomotive Finished Material Co., Atchison, Kans.
Safety valves	Coale Muffler & Safety Valve Co., Baltimore, Md.
Operating valve and relay valve for air whistle	Viloco Railway Equipment Co., Chicago.
Poppet valve gear; power reverse gear	Franklin Railway Supply Co., Inc., New York.
Cylinder cocks; blow-off cocks	The Okadee Company, Chicago.
Boiler steel	Lukens Steel Co., Coatesville, Pa.
Tubes and flues; steam pipes	National Tube Co., Pittsburgh, Pa.
Flexible staybolts	Flannery Bolt Co., Bridgeville, Pa.
Mechanical lubricators; lubricator check valve; oil distributors	Nathan Manufacturing Co., New York.
Booster (one locomotive)	Franklin Railway Supply Co., Inc., New York.
Booster control valve	Nathan Manufacturing Co., New York.
Alemite fittings—tender and engine	The Prime Mfg. Co., Milwaukee, Wis.
Booster steam- and exhaust-pipe lagging	Johns-Manville Sales Corp., New York.
Automatic lubricator manifold drains	The Okadee Company, Chicago.
Security circulators; brick arrangement for circulators	American Arch Co., Inc., New York.
Superheater	The Superheater Company, New York.
Multiple throttle	American Throttle Co., New York.
Steam-pipe covering	Union Asbestos & Rubber Co., Chicago.
Turbo feedwater heater	Manning, Maxwell & Moore, Inc., Locomotive Equipment Division, Bridgeport, Conn.
Injectors	Wm. Sellers & Co., Inc., Philadelphia, Pa.
Stoker	Standard Stoker Co., Inc., New York.
Fire door	The Standard Locomotive Equipment Company, Toledo, Ohio.
Air whistle	Leslie Co., Lyndhurst, N. J.
Sanders	Graham-White Sander Corp., Roanoke, Va.
Headlight and generator	The Pyle-National Company, Chicago.
Bell ringer	Railway Service & Supply Corp., Indianapolis, Ind.
Cab window sash	The Adams & Westlake Co., Elkhart, Ind.
Clear vision cab window	The Prime Mfg. Co., Milwaukee, Wis.
Cab doors	The Morton Mfg. Co., Chicago.
Steel sheet for cab apron	Alan Wood Steel Co., Conshohocken, Pa.
Cab seat cushions	Dunlop Tire & Rubber Corp., Buffalo, N. Y.
Cab signals; train control	Union Switch & Signal Co., Swissvale, Pa.
Flexible connections between engine and tender; steam-heat connections	Barco Manufacturing Co., Chicago.
Tender:	
Frames	General Steel Castings Corp., Eddystone, Pa.
Tank steel	Carnegie-Illinois Steel Corp., Pittsburgh, Pa. Jos. T. Ryerson, Inc., Chicago.
Roller bearings	The Timken Roller Bearing Co., Canton, Ohio.
Coupler; coupler carrier; coupler release rigging; coupler yoke	National Malleable & Steel Castings Co., Cleveland, Ohio.
Draft gear	Waugh Equipment Co., New York.
Steam-heat connections	Vapor Car Heating Co., Inc., New York.

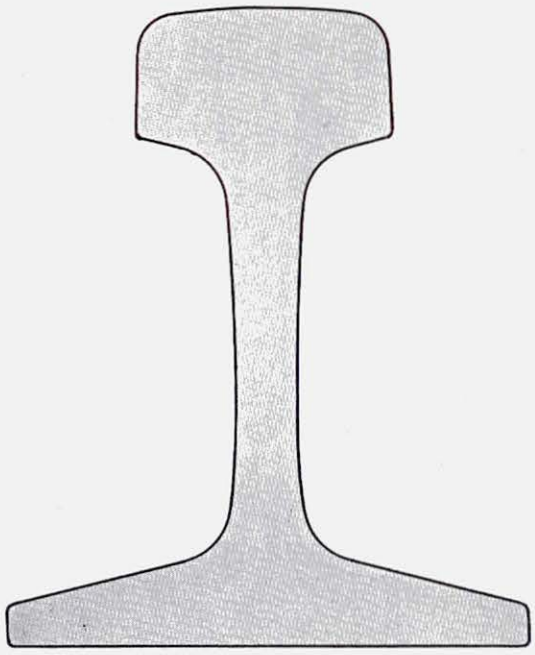


The Cast-Steel Bottom for the Tender

Suggests Change in

Rail Design

As Result of Investigations



Seeks to overcome effect of high web stresses at point of minimum section by inverting and thickening the web

By Walter B. Leaf,
Research Technician, D. & R. G. W., Denver, Colo.

THE appearance on the Denver & Rio Grande Western, early in 1940, of an unusual type of web failure in 112-lb. rail resulted in a series of investigations and studies of web stresses and rail design by that road, and by the Stresses in Track organization of the Association of American Railroads,* which have pointed definitely toward a solution of the problem. In fact, as a result of these studies, the D. & R. G. W. has already modified the design of 112-lb. rail rolled for its own use, the new section weighing approximately 115 lb. per yd.

The failure experienced on the Rio Grande was a horizontal split web, as shown in Fig. 1. It was caused by a fatigue crack originating at the outside of the web in the decarburized surface and progressing inwardly. After the crack had progressed about half way through the web, sudden fracture occurred through the remainder of the section. Inspection revealed that these horizontal web cracks are appearing at various locations on the railroad, at intervals of no particular frequency, and on tangent as well as on curved track.

Figure 2 shows another of the fatigue cracks, magnafluxed to make it more readily visible. It will be seen that while the crack and failure shown in Fig. 1 remained well up on the web, the one shown in Fig. 2 extends diagonally from above the center to a point nearer the base. Various other web cracks varied in position between the head and base, although the majority were well up in the web. This variance in location of the web cracks was explained later in the investigation, when it was found that the location of maximum web stress is variable with changes in the direction of the applied load on the rail.

After considerable study, the solution appeared to be in strengthening the web, and the railroad undertook to have this done in future rollings. Without making new rolls for a new design, it was found that the best expedient would be to trim off the rolls for the 112-lb. A. R. E. A. section so that the web would be thickened. This change was made, producing a straight web on both sides, although it involved an extra mill charge in order to secure this special section. Since the adoption of this modified design, no failures of the type mentioned have occurred in the new rail. However, the solution was considered a temporary expedient and the studies were continued.

Cause of Failure Analyzed

The fatigue cracks usually appeared on the field side of the rail, occurring on both the stamp and brand sides. Some were found which had traversed through the branding or through the stamped letters or numbers; others occurred where there were no brand or stamped

* Report on Stresses in Railroad Track, A. R. E. A., Proc., 1941, Vol. 42, page 758.

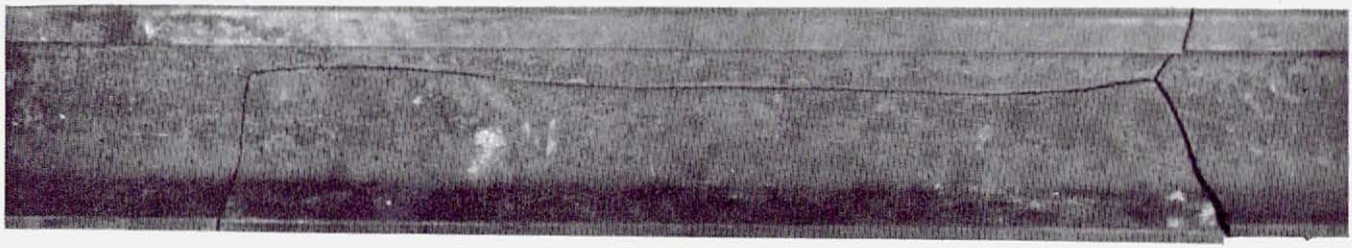


Fig. 1—Side Elevation of a Failed 112-Lb. Rail

letters or numbers. In no cases were surface imperfections apparent. These cracks could not be found by the detector-car method of inspection, so the routine method used to locate them was to look for bleeding or rusting of the cracked surface in the web portion of the rail. In one location, 29 rails of 112-lb. section were found to have these web cracks.

There are four general causes of failures of machine parts or structures: Improper metallurgy, improper design, improper fabrication and improper handling in

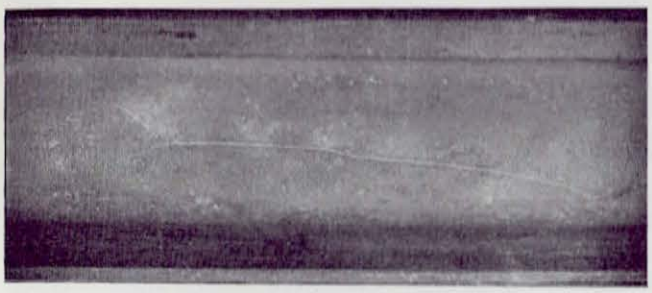


Fig. 2—Close-Up View of a Fatigue Crack in the Web of 112-Lb. Rail

service. Combinations of these classifications are sometimes found; hence, in the study of the rail web cracks, all possible phases of the four categories were investigated thoroughly. From a metallurgical standpoint, it was found that the physical properties of the rail were well above specifications. Micro examination showed only the presence of decarburized skin; no seams, laminations, inclusions, or other flaws were detectable. Also, there was no evidence of mishandling in service, such as tool marks, etc.

The fatigue cracks were found to originate in the soft decarburized skin of the rail, and it seemed certain that the decarburized skin was a contributing factor to their formation. However, there seems to be no practical metallurgical method for eliminating the formation of decarburized surfaces during the rolling of rail.

With the possibility that some condition on the locomotives might have contributed to the development of the cracks, this feature was investigated. However, the fact that the failures occurred without any particular frequency of location discounted defective equipment as the cause. Having eliminated these other factors, design seemed to be the major culprit, and during the investigation, overwhelming evidence was collected to prove this a fact.

Investigation Methods Analyzed

There are three general methods of studying design features. One consists of making strain gage measurements on the actual part in actual service; another is to make observations on models of the part; and the third consists of mathematical calculations based on all the assumptions that can be made. For a complex shape and complicated loading, the mathematical method is actually dangerous in the hands of anyone except a genius, because an incorrect assumption is bound to lead to incorrect results, as will be pointed out in more detail later.

The use of models is an old and reputable method in which there are many technics. By far the most accurate and satisfactory model technic is the photoelastic method. This method was used extensively in the Rio Grande's investigations, especially in the earlier stages.

The remaining technic, the use of strain gages, is, of course, the one method above reproach, since it involves the measurement of actual strain in the actual piece under actual service conditions. The only drawbacks to this method are that the necessary equipment is expensive and is complicated to use, and that only one point can be investigated at a time with each gage. A combination of the strain gage and the photoelastic technics is by far the best in point of results obtained and the effort necessary. This combination method was used in solving the problem of web failures. At the time of the first failures, no strain gage equipment was available, although it was made so at an early date.

Photoelastic Method Used

The photoelastic method is simple and exceedingly accurate when used properly. One advantage of the method lies in the fact that the entire stress distribution is seen, whereas with strain gages, only one isolated point is measured. Thus, with only strain gages, the point of maximum stress may be missed.

The use of the photoelastic method was, then, the first serious attempt made to study the design features of this failed rail. After a month of investigation and consideration, a stress diagram, as shown in Fig. 3, was drawn and submitted to the road's management. Actually, the diagram in this figure contains some field data

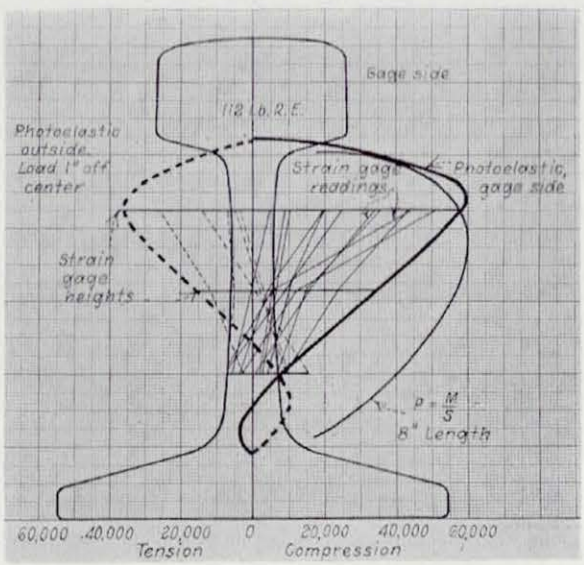


Fig. 3—Stress Diagram, 112-Lb. Rail Section

obtained by the use of strain gages, but the two heavy lines, one solid and the other dotted, were drawn before any such measurements were made. These lines are labeled "Photoelastic, gage side" and "Photoelastic, outside—load one inch off center." The remainder of the diagram will be explained later.

It was decided that an eccentric loading of the rail head in a more or less vertical direction was the cause of sufficiently high web stress to cause the fatigue failures. There is something peculiar about the diagram. It will be noted that slight tension is predicted at the base of the gage side of the web, together with slight compression directly opposite. Photoelastic methods showed that this should be the case, strange as it seemed. However, the field measurements confirmed the diagram, as can be seen. Figure 3 shows that compression of about 60,000 lb. per sq. in. is to be expected in

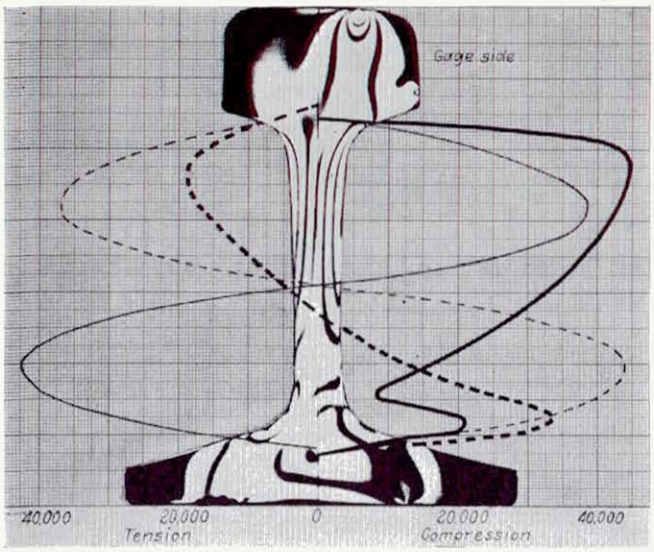


Fig. 4—Stress Diagram For Proposed 114-Lb. Rail Section

Probable maximum stress distribution in proposed 114-lb. rail. Solid lines, gage side. Dash lines, field side. Heavy lines, vertical eccentric load. Light lines, lateral load. Rail design formed by inverting 112-lb. web and thickening it 1/16 in.

the gage side of the web, and a little less than 40,000 lb. per sq. in. tension along the outside. This stress is vertical in direction; hence, it would cause a horizontal fatigue failure. It will be noted that the point of maximum stress is slightly above the minimum section. Now, referring to Fig. 1, it is seen that the actual failures occurred at about the height of the maximum stress in the diagram.

Strain Gage Measurements Made

About the time of these failures, the Engineering division of the Association of American Railroads was developing a new type of strain gage equipment. This equipment was finished and available in May, 1940, and was sent to Green River, Utah, to be used for field measurements. With this apparatus, only six simultaneous measurements could be made, so the gages had to be shifted from point to point in order to make a thorough study. Measurements were made on 112-lb. rail on both straight track and on a curve of 2 deg. 40 min. They were also made on 110-lb. rail, and later on 131-lb. rail, on straight track and on a 6-deg. curve. In one type of gage distribution, the gages were placed vertically at the minimum web section on the inside of the rail, at 15-in. intervals. In this position, several records showed that while some of the gages were in compression under a particular wheel, an adjacent gage registered tension. They also showed that the various wheels of an engine might cause either compression or tension at any particular gage location, in amounts varying from 20,000 lb. per sq. in. tension to 65,000 lb. per sq. in. compression. Truly, the web takes a beating.

Motion pictures of a number of runs were taken to show the position of the wheel counterbalances as they passed over the gage location; there was no relationship between counterbalance position and web stress. Plaster casts were made of a number of driver tires to show the extent of tread wear. Again, nothing was learned.

Higher stress was measured in the south rail than in the north rail. This was assigned to the vagaries of chance, since the road was single track at the test site. It may be said in passing that the roadbed was in excellent condition. Measurements were made at a variety of train speeds from 5 to 70 m. p. h., and again no relationship with web stress was found.

In order further to tie the high web stress to eccentric loading, a short section of rail in track was ground to restrict the head bearing area to the central ½ in., and immediately the stress values fell off to reasonable amounts. As a further test in this direction, 1-in-20 canted tie plates were substituted for the original 1-in-40 plates. Since the wheels are coned to a 1-in-20 slope, this made for more central bearing on the rail. Again, stress values fell off. The final point to clinch the argument was the fact that where high compression was found on one side of the web, high tension was always found on the opposite side, indicating a bending moment.

The disquieting thing about these measurements was the unusual value sometimes found. Upwards of 70,000 lb. per sq. in. compression to 25,000 lb. per sq. in. tension were not uncommon. These values are well above the long-time endurance limit of rail steel, particularly so on a specimen with a rough, decarburized surface. The only favorable factors found in the investigation were that only about one per cent of the locomotive wheels caused stress near the maximum, and that as time went on, the rail head wore more nearly to the average wheel contour, so that the degree of eccentricity of loading gradually decreased.

Measurements Point to Cause

Prior to the discovery on the D. & R. G. W. of the particular type of web failures under discussion, it appears that no failures of this kind had been reported elsewhere. However, such failures have now been found on other roads in various sections of the country. If wheel loads are light, web stress is also light. By the time a million light wheels have passed over the rail, it is worn more nearly to the average wheel contour, and in the interim, stress values have not been too high. However, if a hundred thousand heavy wheels pass over new rail, it is as yet unworn, and stress values are above the short-time endurance limit. This does not mean that no failures will take place under lighter wheel loads or under less eccentricity of bearing. Such failures are now taking place. There is no use trying to overlook this fact. And these failures are widespread and frequent enough that notice is being taken. As soon as possible, steps must be taken to change rail web design.

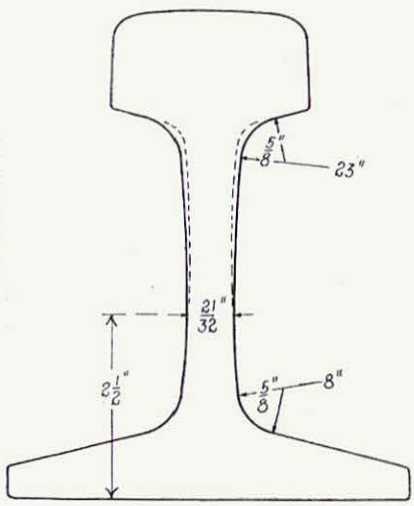


Fig. 5—The Proposed Rail Design. Standard 112-Lb. Rail Web Shown in Dotted Lines

Referring again to Fig. 3, the light lines connect various simultaneous strain gage readings at different heights on the web as indicated. It is seen that the field values follow closely the photoelastic predictions. Where the values are low, eccentricity of loading was small. Again, these lines show the gage side condition solid and the outside condition dotted. The curve noted P = M/S shows the theoretical stress distribution for an eight-inch length of rail so eccentrically loaded that the maximum compression is equal to that predicted for continuous rail. Note that the maximum stress is at the height of the minimum section, and that there is no reversal from compression to tension near the bottom.

Having determined the cause of these failures, it was then our problem to determine what to do about it. Any change in rail design deviating too far from standard practice would necessitate changes in joint bars, frog and switch appurtenances, and too many other things to handle on short notice.

One expedient was possible. The web of standard 112-lb. rail could be thickened by running a straight line between the top and bottom fillets. Thus, standard head-free or head contact joint bars could be used and no compromise joints would be necessary in joining up standard 112-lb. rail and rail of the new web section. Adopting this expedient, the mill where our rail is rolled trimmed off a set of rolls to make such a section, which increased the thickness at the point of minimum of the old 112-lb. rail from $^{19}/_{32}$ in. to $^{3}/_{4}$ in.

Sixty miles of this new rail, weighing 115 lb. per yd., were laid last year. Strain gage readings* were made two months after this rail was put in service. The stress distribution was about as shown in Fig. 3 for 112-lb. Some values around 55,000 lb. per sq. in. were recorded, but this rail was so new and unworn that no wheel had contacted it beyond the center of the head. Thus, the eccentricity of bearing was much greater on the average than in the case of the 112-lb. rail measured previously.

Web stress measurements† were made by the A. A. R. field party on 112-lb. rail on the Illinois Central. Here, the same type of stress distribution was found as recorded on the D. & R. G. W., although the values were somewhat lower. The Illinois Central rail was much older and the head more worn. Furthermore, the actual cant of the rail was about 1 in 25, whereas on the Rio Grande, the actual cant was about 1 in 35.

New Section Proposed

Seemingly, an air-tight case has been made against the present web design of 112-lb. rail. The next question is, "What should the design be?" The obvious answer is to thicken the web at the present points of high stress and to reduce the thickness at points of low stress.

To determine the degree of change that should be made, all of the higher values from the field readings were plotted. It was desired to create a web wherein the maximum operating stress would not be more than 40,000 lb. per sq. in. It was found that if the web of the present 112-lb. section was turned upside down and thickened $^{1}/_{16}$ in. throughout, the desired conditions were obtained, and the new section weighed 114 lb. per yd.

After the field measurements were made on the 115-lb. rail, a photoelastic model of this section was made and a method of loading was devised to produce a stress pattern in the model comparable to the maximum field readings. Also, a model of the newly suggested rail design, with inverted web, was made and loaded as above. The stress diagram and photoelastic pattern of Fig. 4 tell the story. The maximum value of compression from vertical eccentric loading is 43,000 lb. per sq. in.

Lateral Loading Analyzed

Thus far, nothing has been said of the stress produced by lateral loading. It is impossible to know what the actual load on the rail is when strain gage readings are taken. Here again, the photoelastic method has its advantage. Figure 4 has a set of diagrams of probable stress distribution under a purely lateral load. They seem more peculiar than the diagrams for vertical loading since they show a very marked reversal from compression to tension along each side of the web. It is, of course, practically impossible to have a pure lateral loading in actual practice.

Designers of present rail will be surprised to see such a stress distribution under lateral loading. The present 112-lb. rail was supposedly designed to withstand high lateral action, such as is experienced on curves with the train traveling at greater than superelevated speeds. Thus, the web was thickened at the base, since the bending moment was supposedly greatest at that point. And so it would be if the rail were made up of a large number of separate short sections. But a continuous rail behaves in no way similar to a short section.

Consider for a moment a short section of rail under a vertical eccentric load. The web bends and the head moves sideways. If the load is to the right of the center of the head, the web has compression on the right side and tension on the left, and the head moves to the right, rotating slightly. However, lateral stiffness of the rail head prevents this movement, and in order to put our lateral cross section back into a continuous rail, we would have to push the head to the left to have it properly lined up. It is this section that causes the slight amount of tension in the lower part of the web on the loaded side.

Another condition that influences web stresses very greatly is then, the shape of the head. If very narrow, its restraining action is slight and the rail acts more like a series of short pieces. If very deep, the effect of the wheel load is spread over a greater length of web, and unit stress is low.

Considering now the lateral loading, it will be seen readily that since the rail head is rather stiff laterally, the effect will be to spread the load over a considerable length of the web. And since the rail head has some torsional rigidity, it resists a purely lateral movement and slight rotation of itself. The tendency, therefore, with a lateral load on continuous rail, is to bend the web in an S shape.

As a sidelight on lateral loading, a number of field stress measurements were made on tie plates. In order to reproduce in a tie plate model the stresses found, it was necessary to apply the load 20 deg. outward from the vertical. The field tie plate measurements were made on tangent track. Previous rail measurements showed that there is more lateral action on tangent rail than on curved rail, again an anomaly. The engine weaves from side to side on tangent track so that impact occurs, whereas on curved track it usually rides one rail or the other, exerting a steady flange pressure. Thus, if the

* Stress Measurements in the Web of Rail on the D. & R. G. W.-A. R. E. A. Bulletin 432, page 23.

† Report on Stresses in Railroad Track, A. R. E. A. Proc., 1941, Vol. 42, page 758.

maximum normal lateral action was observed in the tie plate measurements, the maximum lateral direction of the applied load in service would be 20 deg. outward from the vertical.

In a number of field measurements, arrangements were made to determine the extent of the lateral action by placing gages horizontally along each side of the rail base. Any difference between the strain readings was an indication of outward or inward lateral action. Where this action was high, web stress was usually moderate —never high.

The record shows that 110-, 112- and 131-lb. rail web failures have been experienced, and strain gage readings on these rails show that the design is at fault. One of the peculiarities of the 112- and 131-lb. designs is that the minimum web section is relatively high, being close to the point of application of the load. Photoelastic investigation, using a three-dimensional model, showed that the effect of the wheel load spreads out along the web as it goes down. Thus, the upper portion carries the load on a shorter length than the lower portion, and if the web were of uniform thickness from top to bottom, the unit stress would be greater near the top than at the bottom. Obviously, if the minimum section is relatively high, the design is faulty.

Findings Not New

Somewhat more than 10 years ago, S. Timoshenko and B. F. Langer of the Westinghouse Electric & Manufacturing Co., made a thorough study of web stress. They used strain gages and both photoelastic and mathematical methods, working with the P. S. 130-lb. section. Their summary, published in the Transactions of the A. S. M. E., reads:

"For the magnitudes of vertical and lateral load found in practice, the highest vertical web stress is produced by a vertical load applied near one edge of the rail head. In most rails, this maximum stress is located in the fillet under the head, and the stress in the lower part of the web is comparatively low. The vertical web stress produced by lateral load is usually not excessive. This stress is important because, for the most usual combination of high vertical and lateral load—the stresses from the two load components are additive, both being compression. Points brought out by these tests that are of value to the rail designer are that a more uniform stress distribution can be obtained by thickening the upper part of the web at the expense of the lower part, and that bringing the wheel load nearer the center of the rail will lower the stress in the fillet under the head."

In the present work, no high fillet stress was noted except in the 115-lb. design. No fillet strain gages were available, so this feature was investigated by photoelastic methods only. And in the 115-lb. rail, fillet stress was less than web stress in the 112-lb. section.

Features of Proposed Section

We now arrive at our destination, the optimum rail design. In my opinion, it should be as shown in Fig. 5, for a rail weighing around 115 lb. The head and base of the present 112-lb. rail have been retained, since they seem adequate. The minimum web section is $^{21}/_{32}$ in., $2\frac{1}{2}$ in. above the base. The upper portion of the web is formed by a 23-in. radius and the lower portion by an 8-in. radius. Top and bottom fillets are $\frac{5}{8}$ in. It will be necessary to use head-free joint bars with such a section since the upper fishing surface is restricted.

Since high rail web stress is produced by eccentric loading, some consideration might be given to changing the head contour at the outside in order to increase the crown, thus throwing the load nearer the center. For curve rail, the present width of head is probably desirable, to offer additional width for wear. Flange oilers, however, should be considered.

For tangent track and low degree of curvature, a narrower head would be adequate. With this idea, we run into a multiplicity of sections, which is undesirable. On the other hand, there are already nearly two dozen different rail sections in use in main-line tracks. A thorough study of all the factors involved would probably lead to six or eight standard sections, which would fill all requirements. The major fault in present rail design is in the web. It is of a serious nature. Consideration must be given to a better design.

Public and Labor Relations, the Unsolved Problem

What promise and wonders the future holds if representative democracy can only be saved and free men can continue their upward progress!

Only, however, under a democracy where freedom and opportunity stimulate and reward the initiative and ability of each individual according to his merit, can we hope for such progress and the highest good to mankind in general.

All leaders of men must realize these truths. They must teach the masses, and must themselves squarely live up to the principle, that there should be no harmful conflict between capital and labor, but that both are as essential and complementary to each other as power to the machine.

When this ghastly war is over, the problems of peace and reconstruction will test the probability of men remaining free and the ultimate progress of our nation and its peoples. Clear it is, however, that democracy to survive must function more efficiently, and capitalism or private enterprise to survive must have its merit better understood and appreciated by the masses. If the creation and distribution of wealth prior to the New Deal was sound in principle and needs only improvement without radical change, that fact must be made clear to the masses. If there be a better democratic method its understanding and adoption cannot be too long delayed.

Railroads under our democracy have in recent years not fared so well. Whether this be the results of sins of omission or commission, the activities of political demagogues, new competitive forms of transportation or other causes, need not be determined here. Sufficient it is to say that their present affluence is temporary and wholly the result of war traffic. With the ending of the war, their competition promises to be greater and better organized, and their problems magnified. Undeniably they have proven their necessity and worth during war. They will remain also essential in times of peace, whether privately or governmentally owned or operated.

Railroad managers have done a poor job in selling the merits of our industry to the public. We have done even worse in our labor relations. Not only must we aspire to and deserve a higher place in public opinion but with labor leaders and our employees we must try to prove such mutuality of interest as will sustain us as a private enterprise against government ownership and control and in competition with strong and rapidly growing adversaries.

—From an Address by President J. B. Hill of the L. & N. to the Am. Short Line R. R. Assn.

A.A.R. Electrical Section Reports

No meeting held by Engineering Division but reports on vital subjects are released

WELDING equipment developments and notes on conservation of electrodes, protective lighting with particular reference to the lighting of bridges, and suggested means of safely overloading transformers are three subjects of special interest in the 1942 report of the Electrical Section, Engineering Division, Association of American Railroads. No convention was held but brief reports were printed on subjects of vital interest in the present emergency.

Electric Welding

Comments on welding equipment and its use include the following conclusions and suggestions.

Improvements in welding electrodes have largely offset the advantages originally claimed for the 180-cycle a.c. welder equipment. Rectifier-type welders produced to date are of limited capacity and their use is restricted to the welding of thin sections with welding electrodes of 1/8 in. diameter or less. Manufacturers claim that this type of welder is superior to others for welding of light gage material.

Direct-current welders, driven by synchronous motors, have been introduced to overcome the low efficiency and low power factor inherent to the induction motor at low loads. Such motors have the disadvantage of requiring a double winding with its consequent repair troubles, and it is important that full voltage be maintained at the motor terminals. Relative merits of a.c. vs. d.c. welders are summed up with the statement that any choice depends upon economics and the type of work to be performed. Nearly all a.c. welders are now being manufactured with a capacitor across the transformer primary to improve their inherently low power factor. A.c. transformer type welders can be successfully operated in parallel to obtain increased current for one arc, but when this is done care must be exercised to open all primary circuits to avoid feedback through the secondary. Under the title "Control of Welding Equipment," attention is called to a saturable reactor control for a rectifier type welder, which permits very smooth and accurate control of the welding current, an attribute essential to the welding of thin gage material.

A.c. welder control can be divided into three forms: (1) Movable core reactor; (2) movable coil reactor, and (3) switches and tap changers to change connections on the transformers or reactor windings. The movable core reactor permits an infinite number of current settings and is adaptable to welders of medium and high current ratings. Its inherent tendency to produce noise has been overcome to a great extent by the use of resilient supports. The movable coil control allows an infinite number of settings but has the disadvantage of having a mechanically weak coil. The switch type control has no large movable parts but requires heavy switching connections to carry large currents.

Suggested means of conserving electrodes to conform with the general needs of material conservation are, as follows:

(1) Use electrodes down to the smallest practical stub ends. With shielded-arc electrodes this calls for use down to the tapered portion of the coating. Gripping the electrode in the holder at the extreme end of the bare portion will help.

(2) Provide a handy container in which to deposit stub ends. Pick up promptly electrodes or stub ends which accidentally fall to the ground.

(3) Use the stub ends. For down hand build-up work the preferable method is to lay stub ends on the work along the bead and melt them in with the arc. The heat should be sufficient to float to the surface as slag all shielded coating from the stubs.

(4) Use correct values of current to prevent spatter. Losses from this source may range from 3 to 15 per cent. Proper selection of this factor may in some cases effect a saving of 10 per cent or more.

(5) Learn and use the correct arc length, angle of electrode with the work, and rate of travel for the particular job. Irregular and unsymmetrical beads can cause preventable losses much greater than 10 per cent.

(6) Restrict deposited metal to the requirements. Omit the "extra for good measure."

(7) Use methods which take minimum electrode material. Work in scrap plates and parts as strengthening members to avoid heavy deposits of weld metal.

(8) Fit all joints properly before welding.

(9) Position the work where possible.

(10) Store material in a manner that will insure against damage. Protect the shielded coating from damage while handling. Avoid bending of electrodes whenever possible. Protect electrodes from contamination with dirt and grease.

(11) Protect electrodes from moisture. If electrodes have accidentally become damp, dry them carefully.

(12) On non-ferrous welds requiring machining, save the cuttings and work them in on down-hand build-up work. Chips may also be melted and poured into rod form for re-use

The report is signed by: C. A. Williamson (Chairman), S. J. Fairbanks, F. A. Linn, J. C. McElree and R. P. Winton (Vice-Chairman).

Protective Lighting

A major part of the report on Illumination describes the general requirements of protective lighting and concludes with specific recommendations for the lighting of bridges.

These recommendations follow:

(1) Lighting alone is of little value as a preventive of sabotage.

(2) Guards, alone, are at a minimum of efficiency in the absence of light.

(3) A combination of light and guards make an effective weapon against sabotage, its effectiveness being in proportion to the amount of light and the number of guards and their armament.

(4) In general, stationary guards, who may be

afforded some measure of protection and concealment, are preferable to patrolmen who are more readily subject to attack. At very critical points, guards should operate in groups of not less than two.

(5) Fenced areas are most readily guarded. The ground adjacent to both sides of the fence should be sufficiently illuminated to enable guards to observe activities in that zone. Lighting units should be so placed that no dense shadows will be cast by the fence.

(6) Lighting units should be of such type and so disposed that there will be no glare in the direction of the guard to interfere with his vision. The guard's station with respect to the lights has a considerable bearing in this matter.

(7) In the case of fences of great length, it will usually be found that a series system of lighting is most economical in both expense and the use of critical materials.

(8) The illumination of areas around unfenced plants may be most readily accomplished by the use of floodlights mounted on buildings or poles, and so placed that the guards will be looking in the direction in which the light is projected, to avoid glare. This system has the advantage of producing a glare in the eyes of potential intruders, thus hampering their observations and movements.

The dark areas around and between buildings should be dispelled by supplemental lighting. Floodlights may not be acceptable in built-up areas where annoyance to occupants of adjacent property must be kept to a minimum, in which case suitable bracket lights mounted on buildings or poles may be employed.

(9) It is impossible to light railroad yards in such manner as to eliminate all deep shadows and places of concealment. Therefore, in addition to the general illumination usually provided, the adjacent terrain should be well lighted so that guards may observe the approach of prowlers.

(10) Gateways and entrances to plants or yards should be well lighted so that guards may quickly and positively identify all persons and inspect all vehicles and material entering the plant.

(11) *Lighting of Bridges.* The severest damage to a bridge may generally be accomplished by destroying piers or other substructures; hence, these parts should be adequately lighted for protective purposes. This may be done by placing two floodlights on each pier, one on each side at or near the top and under the longitudinal center line of the superstructure. These lights should be of the wide-angle type, the axis of the beam being trained on the next pier, thus illuminating not only the pier but a considerable zone on each side of the bridge, and enabling guards to observe all activities, if any, under or near the bridge. This position of the lights protects the guards from glare, and insures maximum perception.

Drawbridges or other types which must be opened for navigation should have an adequate number of lights bearing on critical operating points, following, however, the same plan as for piers.

Stone arch bridges may be lighted by suspending a high wattage lamp, with or without reflector, at the crown of each arch, midway between the sides of the bridge.

The superstructure may be lighted by means of pendent units having deep bowl reflectors. It is an advantage to have a higher level of illumination at each end of the bridge so that activities on the bridge may be seen in silhouette.

The cable anchorages of suspension bridges should be well lighted and guarded.

Facilities should be provided for quick blackout of all lighting in case of need.

The report is signed by: E. R. Ale (Chairman); D. M. Burckett, W. F. Freutel, J. E. Gardner, G. T. Johnson, S. D. Kutner, R. J. Needham, G. L. Sealey, C. P. Trueax and L. S. Billau (Vice Chairman).

Overload Capacity of Transformers

The report of Committee 11 on Design of Indoor and Outdoor Substations has given special attention to means of increasing the overload capacity of transformers, and offers instructions for the inspection and maintenance of transformers as a means of avoiding failures in the face of extreme difficulty of replacement. In general, transformers are able to carry heavier loads than their nameplates specify. This is a known fact, but how to utilize this latent capacity with safety has been a problem.

Rating standards recognize a maximum hottest-spot temperature in the windings for conventional 55-deg. C. rise transformers. The following hot-spot temperature limits as set in the operating guide in the ASA standard for transformers serve as a basis for determining the safe loads that transformers can carry.

Recurring Daily in Any 24-Hour Period		
(2 Hours)	(8 Hours)	(24 Hours)
110 deg. C.	105 deg. C.	95 deg. C.
Emergencies Occurring Infrequently		
(2 Hours)	(8 Hours)	(24 Hours)
115 deg. C.	110 deg. C.	105 deg. C.

A hot-spot temperature of 120 deg. C. should not be exceeded for insulation composed of organic material as damage may occur above this value. The temperature of the oil in which the transformer is immersed should not exceed 90 deg. C.

The following factors should be considered in determining the spare capacity in a transformer.

Generally, the length of time that a transformer can carry a given load is fixed by the insulation used. The rate of deterioration of both oil and solid insulation is a function of time and temperature. The higher the temperature and the longer the time the more rapid is the rate of deterioration. If oxygen is kept from contact with the oil, deterioration is greatly retarded.

The length of time required for a transformer to reach a final temperature when load is applied is dependent on the heat storage capacities of the oil, insulation, steel and copper all of which vary according to the design of the transformer. This is known as the "time constant," and the longer the time constant, the greater is the short-time overload capacity. The more the temperature of the oil, steel and insulation lags behind the copper temperature, the greater is the tendency to keep the copper cool.

Considering a predetermined limit of copper temperature, the smaller the temperature differential between the copper and oil after the transformer has reached a constant temperature at full load, the greater will be the short-time overload capacity.

Overload capacity depends in part on whether the day is cold or warm. At lower temperatures heat is dissipated more rapidly to the air from the transformer case or coolers.

It is usual to allow one per cent increase in rating for each degree C. that the average daily ambient temperature falls below 30 deg. C. for self-cooled and 25 deg. C. for water-cooled transformers. Conversely, load

should be reduced 2 per cent for each degree the cooling medium is above 40 deg. C.

Transformers operated by a known copper temperature can carry short-time overloads of 200 and 300 per cent of full load. This permits the installation of transformers rated at the normal average load and using the inherent overload capacity to carry the peak load.

Various means of increasing the capacity of transformers consists of using forced oil circulation, forced air cooling, water spray cooling, and sun shields or the painting of transformers to reflect sun's rays. Overall capacities can also be increased by correcting load factor or power factor.

Although transformers require less care and attention than other kinds of electrical power apparatus, there is no reason for neglecting them. A regular program of inspection should be established, and then conditions under which a transformer operates will determine to some extent the frequency with which it should be inspected. Some companies make a practice of inspecting large transformers each year and smaller distribution transformers every five years. In the case of large units this inspection entails checking ground resistance, circulating current and all connections such as interior needs, bushings, etc. The oil is given a complete test and filtered if necessary. A record chart of Megger tests of the windings may also be kept.

In the case of smaller distribution transformers the inspection should determine if the ground connections are intact and protective equipment in good order, if there are cracked bushings, dirty leads or indications that there has been a loss of oil. Unusual noises or high temperatures of the transformer, considering the load carried, should be investigated at once. The condition of the oil is of primary importance in oil-filled transformers. Principal causes of its deterioration are water and oxidation. A fraction of a teaspoon of water in a barrel of oil will make it necessary to treat the oil. Oil of normal dryness should test 22 kv. or higher in the standard test cup and in large transformers it should not be permitted to go below 20 kv. with a .1 gap.

The report is signed by: H. E. Preston (Chairman), H. F. Brown, Norman Litchfield, S. R. Negley, H. W. Pinkerton, H. P. Wright and E. H. Brown (Vice-Chairman).

Other Committee Reports

Other committees reporting include the Committee of Direction, Committee on Power Supply, Committee on Standardization of Apparatus and Materials, and the Committee on Track and Third Rail Bonds.

The work of the Power Supply Committee consists for the most part of the preparation of a power contract, i. e., form of agreement for purchase of electrical energy for "other than traction purposes." The Committee on Standardization of Apparatus and Materials is preparing an emergency alternate for friction tape specifications which will bring them into alinement with emergency alternate federal specifications. Specifications for rubber insulated wires and cables have been revised to take into account certain recommendations of the manufacturers and to incorporate the types of rubber insulations and jackets permitted under WPB Order M-15-b-1.

The report of the Committee on Track and Third Rail Bonds consists essentially of specifications for welded type rail head bonds and track connectors for carrying return propulsion current.

September Deliveries Down 18 Per Cent

CLASS I railroads received approximately $96,194,000 of materials and fuel, exclusive of new equipment, in September, including $62,656,000 of materials and $33,538,000 of fuel, on the basis of incomplete reports received by *Railway Age*.

Materials, exclusive of fuel, received during the month reflected a continuation of the decline in the materials made available to the carriers since March—the total being 5 per cent less than in August, 2 per cent less than in July, 11 per cent less than in June, 15 per cent less than in May and 21 per cent less than in March when deliveries totalled $79,509,000; the indicated total for September reflected a decline of 18 per cent from the corresponding deliveries of material in September, 1941, and was the third consecutive month that receipts this year were less than the corresponding receipts in the same months of the previous year.

The September figures brought deliveries of materials and fuel, exclusive of new equipment, during the first 9 months of the year to $944,271,000, of which $638,141,000 was materials and $306,130,000 was fuel. This was 8 per cent more materials and 22 per cent more fuel than the railroads received in the first 9 months of 1941; and 45 per cent more materials and 54 per cent more fuel—unadjusted for prices—than the railroads received in the first 9 months of 1940. Included in the materials received during the first 9 months of this year was approximately $35,055,000 of rail and $53,522,000 of cross ties, reflecting a 20 per cent decline in rail deliveries and a 45 per cent increase in cross tie deliveries from the totals for the first 9 months of 1941.

Inventories at the end of September of this year, valued at $522,560,019 in the aggregate, including $54,743,000 of fuel, $20,183,000 of new and second hand rail, $56,009,000 of cross ties, $380,373,000 of other materials (including standby materials) and $11,252,000 of scrap for reclamation and sale, indicated practically no change from inventories of fuel, rail and other materials at the ends of July and of August, but a smaller stock of cross ties by approximately $5,000,000, or 8 per cent, than on August 31, and 12 per cent fewer cross ties than the railroads had at the end of June. The inventory of materials, exclusive of fuel, rail, cross ties and scrap, on September 30 was approximately 27 per cent larger than on September 30, 1941, and approximately 76 per cent larger than on September 30, 1940—again without making adjustments for differences in material costs.

Co-operate or Be Coerced

"Personal freedom under a democratic form of civil order will in the long run depend upon two principles united in one idea—SELF-HELP BY CO-OPERATION; the more we permit State aid to substitute itself for self-help, and compulsion for co-operation, the more certainly we are erecting the Omnipotent State—the mortal enemy of human freedom."—*Thomas F. Woodlock in the Wall Street Journal.*

Railroads-in-War News

WPB Asks for 415 More Miles of Line

An examiner must look into each case and tell ODT if line is useful to war

The Office of Defense Transportation announced December 5 that it has been requested by the War Production Board to certify whether or not certain additional railroad lines are essential to war transportation. The lines already under ODT consideration were listed in *Railway Age* of November 21, page 855. Under the procedure now in effect, Examiner Ralph H. Jewell will investigate the conditions under which each line is operated, then recommend to ODT Director Eastman what certification should be made to the WPB. After Mr. Jewell's recommendation is made public, interested parties have two weeks within which to file protests or comments before final action is taken.

Lines included in the latest WPB request for certification are: Chicago, Milwaukee, St. Paul & Pacific, Monticello, Iowa, to Worthington, 12.5 miles; Denver & Rio Grande Western, Leadville, Colo., to Ibex, 8.97 miles, Gunnison, Colo., to Montrose, 51.12 miles, and Durango, Colo., to Silverton, 50 miles; Southern, Florence, Ala., to Sheffield, 6.28 miles, Forrestville, Ga., to Gadsden, Ala., 50 miles, Norala, Ala., to Tuscumbia 2.6 miles, and Demopolis, Ala., to McDowell, 3.06 miles; Pennsylvania-Reading Seashore Lines, Sea Isle City, N. J., to Ocean City, 6 miles; Clinchfield, Carbo, Va., to Wilder, 8.4 miles; Rock Island Southern, Gilchrist, Ill., to Monmouth, 21.8 miles; Midland Continental, Frazier, N. D., to Jamestown, 27.4 miles; Chesapeake & Ohio, Glen Junction, W. Va., to Flat, 15.04 miles.

Also listed were the Nashville, Chattanooga & St. Louis, Union City, Tenn., to Hickman, Ky., 17.3 miles; Chicago, Burlington & Quincy, Mt. Ayer, Iowa, to Albany Junction, Mo., 4.3 miles, and Des Moines, Iowa, to Osceola, 57 miles; New York, New Haven & Hartford, Milford, Mass., to Hopkinton, 6.64 miles; Ft. Smith, Subiaco & Rock Island, Paris, Ark., to Scranton, 13.6 miles; and Baltimore & Ohio, Sinnemahoning, Pa., to Burrows, including a branch from Wharton, Pa., to Austin, altogether 53 miles.

Continued active interest on the part of some members of Congress in the activities of the WPB and other government agencies in requisitioning rail lines was indicated by the appearance of representatives of the War Department and the WPB before a Senate interstate commerce subcommittee of which Senators Reed of Kansas and Johnson of Colorado are the most active members. On December 3 Senator Millikin, Republican, of Colorado, appeared before this committee to protest against what he termed arbitrary and senseless policies which were resulting in administrative acts contrary to the wishes of Congress. He appealed for the adoption of procedure in cases of proposed rail requisitions which would require investigators to visit the sections served by the lines under study before recommendations are made as to their essential character for war transportation.

In the course of questioning by Senator Johnson on the same day, Major E. T. Butler stated that he was authorized to say for the War Department that Army requirements for rail for the year 1943 would not go beyond those already submitted to the WPB Transportation Equipment Division and given to the committee, amounting to somewhat more than 7,000,000 ft. Answering questions asked by Senator Reed, he explained to the committee some of the reasons for variations in the figures for rail requirements which had been derived from different sources, and indicated that these requirements could be met to a large extent by use of relay rail now reported to be available to the WPB.

At another session of the committee ODT Director Joseph B. Eastman stated that the ODT would discontinue its present procedure of certifying to the WPB whether or not lines are essential to war transportation, and recommend that normal I. C. C. abandonment procedures be followed, as soon as it was demonstrated that military necessity no longer requires this emergency treatment. He added, however, that certain cases would still require that the ODT certification be issued, where the WPB considers that the military requirements are too urgent to await I. C. C. procedure—which, he pointed out, has been materially expedited to meet the current situation—and where it appears that competitive or legal conditions deter railroads from applying to the I. C. C. for authority to abandon certain lines. The ODT is engaged in a survey of such situations, he added, and may recommend that certain abandonments be accomplished through requisitioning where competing branch lines or other non-essential facilities are involved, even though the railroad makes no such application.

Further questioning by committee members brought statements from WPB representatives that the WPB has no immediate plans for actual requisition of all the lines which the ODT certifies as not essential to war transportation, but is having such recommendations made in advance of its actual requirements so that it will be in position to act promptly to requisition such lines if and when need for them does develop.

Rail Manpower Needs Discussed

A. S. M. E. railroad division devotes two sessions to this problem

Following up its consideration of material conservation at a meeting in Cleveland, Ohio, last June, the American Society of Mechanical Engineers, Railroad division, devoted practically the entire program of its annual meeting at the Hotel Astor, New York, on December 3 to discussing "Planned Conservation of Mechanical Manpower." The meeting was presided over by Chairman D. S. Ellis, chief mechanical officer, Chesapeake & Ohio, who made a brief opening address and then introduced the principal speaker, F. K. Mitchell, assistant general superintendent motive power and rolling stock, New York Central. Mr. Mitchell's paper constituted an informative discussion of the subject of railway manpower needs under present conditions and advanced six specific suggestions of steps which will probably have to be taken to meet these needs both on the New York Central and on railroads nationally.

Other speakers during the morning session included Otto S. Beyer, director, Division of Transport Personnel, O. D. T., who discussed labor utilization in a manpower conservation program; and Col. J. L. Walsh, chairman War Production Committee, A. S. M. E., who presented a short inspirational address emphasizing the vital relation of efficient transportation to the war effort.

The afternoon session was begun with the presentation by title of a paper on "Stress Analysis of Passenger Car Trucks" by J. C. Travilla and W. E. Burdick, chief mechanical engineer and engineer, respectively, General Steel Castings Corporation. Following this action, an unusual feature of the program was the broadcasting from London of a 15-minute address by Miss Dorothy Sells, assistant director, Division of Transport Personnel, ODT. This message, transmitted through the courtesy of the British Broadcasting Company, referred to the important work which over 100,000 women are doing on Britain's railways and described some of the conditions which must be met for the successful introduction of women into railway service.

Paul V. McNutt, chairman, War Manpower Commission, said that the commission has placed transportation on the "must" list, as regards providing the manpower essential for the operation and maintenance of railway equipment. He emphasized, however, that deferment is not exemption, as regards railway employees subject to military service, and it is a patriotic

GENERAL NEWS

I.C.C. Bureau Ups Estimate of '42 N.O.I.

Now says it may be $1,552 millions with net income reaching a billion

Increasing the estimate made a month ago, the Interstate Commerce Commission's Bureau of Transport Economics and Statistics now calculates that net railway operating income for 1942 may reach $1,552,000,000, and it thinks it "not improbable that the net income, after interest, rentals, and all taxes, including income taxes, will exceed one billion dollars." These estimates are given in the December issue of the Bureau's Monthly Comment on Transportation Statistics, the November issue having estimated the 1942 net railway operating income at 1.4 billion dollars, as noted in the *Railway Age* of November 14, page 796.

The latter had assumed that fourth-quarter expenses would reflect the same increases over the comparable 1941 months as had September's; but the upward revision came from recognition of the fact that such percentage increases over the previous year were lowered with October, because the present wage scale "was substantially reflected for the first time in October, 1941."

The Bureau points out also that a net railway operating income of $1,552,000,000 would be 7.76 per cent "on an assumed value of 20 billions of dollars." It warns, however, that its estimate "is obviously subject to some error," adding that it makes "no allowance for any possible undermaintenance represented in expenses as reported."

Supporting its prediction that 1942's net income may exceed a billion dollars, the Bureau has this to say: "For the first nine months of this year the net income as reported was $571,971,991. For October this item has not been reported but may be estimated at $135,000,000 . . . making the 10 months' net income about $707,000,000. One method of raising this to a calendar year's total is to increase the net income for November and December, 1941, by the same percentage that the October net income increased, which was 152 per cent, and adding the result to the above 10 months' total. This gives $920,700,000. Another method is to add to the 10 months' net income ($707,000,000) an allowance for the last two months obtained by noting the difference between the 10 months' *net railway operating income* (*$1,160 millions*) and the net railway operating income for the calendar year 1942 as estimated in an earlier paragraph ($1,552 millions). This method gives $1,099,000,000. An average of the two estimates is $1,009,800,000."

Meanwhile, the gross for the 12 months ended October 31 totaled $7,009,695,661, and the net railway operating income $1,309,437,887. For October, the gross was up 44 per cent from the previous year, reflecting increases of 33.5 per cent in freight revenue and 156.5 per cent in passenger revenue. As the Bureau points out, the freight revenue's percentage increase over 1941 remains "nearly stable" from month to month, but the percentage increase in passenger revenues keeps rising. For September it was 141.2 per cent.

October's operating ratio was 55.9 as compared with 69.8 in October, 1941; the 10 months' ratio 62 as compared with 67.5.

It is pointed out that the 10 months operating expenses include depreciation charges amounting to $207,256,627, and charges for the amortization of defense projects to the extent of $65,707,761. Also, allowances for deferred maintenance of $1,779,355, "but this account has been used to only a limited extent."

That there have been wide differences in the revenue trends of the several districts is indicated by one of the statement's tables. The 10 months increase in freight revenue, as compared with 1941, has ranged from 41.6 per cent in the Southern region to 6.3 per cent in the Pocahontas region. The Pocahontas region's net railway operating income for the 10 months was down 20.7 per cent, while that of the Western district was up 61.8 per cent. Railway tax accruals for the 10 months totaled $1,001,328,058, including $633,741,997 of federal income, surtax and excess profits taxes. "Various railways," the Bureau says, "reported substantially smaller income tax accruals for October than for September, indicating a correction of previous over-accruals." It anticipates that further adjustments "are likely to be made in the returns for the next two months."

Strike on National of Mexico Averted

A strike on the National Railways of Mexico which was called for November 21 and which was postponed, has been called off as a result of an agreement between the railway and its workers. Under the settlement, the company agrees to increase salaries 10 per cent, effective August 1, 1942. Other demands will be studied by a mixed commission and the matters which cannot be settled by it will be handled by the Board of Conciliation and Arbitration, the conductors' contract must be taken up within 30 days, the enginemen and firemen's contract must be terminated within 90 days, and the company will pay salaries every 15 days instead of every 10 days.

OPA Seeks General Reduction In Rates

Ex Parte 148 spring increases called an unnecessary burden on nation

Making a direct attack on railroad rates established as a result of the decision of the Interstate Commerce Commission in Ex Parte 148, Price Administrator Leon Henderson on December 4 filed with the commission a petition to reopen the proceedings in that case and discontinue the increases in freight and passenger rates put into effect in the early part of this year. The petition was filed on behalf of the Office of Price Administration and also of James F. Byrnes, director of economic stabilization, and follows a number of OPA efforts to stop specific rate increases since the general increases became effective.

Present freight rates were established March 18 of this year, while increased passenger fares went into effect February 10. As reported in *Railway Age* of March 7, page 484, the changes in freight rates and charges authorized by the commission amounted to an increase of six per cent on many commodities and of three per cent on certain "basic or raw" materials, including sand, gravel, slag, and agricultural products, including live stock, although special provisions limited the increase on coal and coke to a range of three to six cents per ton. No increase was allowed on iron ore. The increase in passenger fares amounted to ten per cent.

The OPA petition calls for action by the commission to reconsider and discontinue these increases on two grounds: (a) They yield "unreasonably high net earnings" to the railroads, and (b) they "are incompatible with the principle underlying the national economic program."

Mr. Henderson's petition points out that the commission, in authorizing the increases, announced that it would hold the record in the case open to consider readjustments or corrections if circumstances should develop to warrant them. When the railroads sought I. C. C. authority to increase rates, an OPA statement adds, they made it clear that "their proposal was not intended to improve their profit position." They were "well satisfied," it says, with the 1941 record of earnings, and sought the increases only to meet increased costs resulting from the wage increases of December, 1941, and increased costs of materials and equipment.

"At that time," the OPA statement continues, "no one could anticipate the great increase in net railroad revenues which have come about because of business expansion, the stabilization of prices affecting

News Department continued on second right-hand page

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Following up its consideration of material conservation at a meeting in Cleveland, Ohio, last June, the American Society of Mechanical Engineers, Railroad division, devoted practically the entire program of its annual meeting at the Hotel Astor, New York, on December 3 to discussing "Planned Conservation of Mechanical Manpower." The meeting was presided over by Chairman D. S. Ellis, chief mechanical officer, Chesapeake & Ohio, who made a brief opening address and then introduced the principal speaker, F. K. Mitchell, assistant general superintendent motive power and rolling stock, New York Central. Mr. Mitchell's paper constituted an informative discussion of the subject of railway manpower needs under present conditions and advanced six specific suggestions of steps which will probably have to be taken to meet these needs both on the New York Central and on railroads nationally.

Other speakers during the morning session included Otto S. Beyer, director, Division of Transport Personnel, O. D. T., who discussed labor utilization in a manpower conservation program; and Col. J. L. Walsh, chairman War Production Committee, A. S. M. E., who presented a short inspirational address emphasizing the vital relation of efficient transportation to the war effort.

The afternoon session was begun with the presentation by title of a paper on "Stress Analysis of Passenger Car Trucks" by J. C. Travilla and W. E. Burdick, chief mechanical engineer and engineer, respectively, General Steel Castings Corporation. Following this action, an unusual feature of the program was the broadcasting from London of a 15-minute address by Miss Dorothy Sells, assistant director, Division of Transport Personnel, ODT. This message, transmitted through the courtesy of the British Broadcasting Company, referred to the important work which over 100,000 women are doing on Britain's railways and described some of the conditions which must be met for the successful introduction of women into railway service.

Paul V. McNutt, chairman, War Manpower Commission, said that the commission has placed transportation on the "must" list, as regards providing the manpower essential for the operation and maintenance of railway equipment. He emphasized, however, that deferment is not exemption, as regards railway employees subject to military service, and it is a patriotic

duty of railroads to make every possible effort to secure replacements for these men from the ranks of those who are older, from women or from minority groups such as negroes and others not previously employed. Mr. McNutt said the present and prospective demand for manpower is so great that men must now be employed, part or full time, for what they can do and not be rejected on account of their respective limitations.

Past-president Hanley of the A. S. M. E. introduced Dean A. A. Potter, Purdue University, who emphasized the importance of technicians to transportation and the war effort and said that the most critical rare material at present is engineers who can design, build and use both civilian and war materials including transportation equipment. He said that the normal output of 12,000 to 15,000 technical graduates a year is not enough to meet present requirements and unless more young men are encouraged to enter and remain in engineering schools, there will be only a handful of graduates three or four years from now.

C. E. Brinley, president, Baldwin Locomotive Works, described briefly the training of production personnel in the Baldwin plant. Brig. Gen. J. S. Hatcher, U. S. A., showed how the straight-line method of shop production is applied to the training of army ordnance forces, both officers and men. Andrew Stephenson, director, Transportation Equipment Branch, WPB, elaborated on the equipment construction program recently authorized for the first half of 1943 and said that the board fully appreciates that both car and tractive power requirements must be met if the war effort is not to become bogged down. He said the board is not attempting to standardize locomotives, but, in the interest of efficient production, particularly as relates to material requirements, both locomotives and cars must be confined to a limited number of designs.

E. R. Battley, chief of motive power, Canadian National, described briefly the important part played by this railroad in the Canadian war effort and indicated that women are being used to an increasing extent in mechanical work. E. P. Gangewere, superintendent of motive power, Reading, referred to the possibility of transferring railroad maintenance work to outlying districts where more men may be available. He said that women work more satisfactorily than men on car cleaning operations, particularly on car interiors. Mr. Ellis introduced the new chairman of the Railroad division, J. R. Jackson, engineer of tests, Missouri Pacific, and the meeting adjourned.

Oil-Rate Increases Withdrawn

Railroads have withdrawn from the Interstate Commerce Commission suspended tariffs wherein they were proposing certain increases in the emergency rates on petroleum and petroleum products from points in Central, Southern, Southeastern, and Western Trunk Line territories to Atlantic seaboard territory. And for this they have won commendation from Price Administrator Leon Henderson, who described the carriers' action as "in keeping with the program of the federal government to stabilize the cost of living."

Mr. Henderson, who noted that OPA protested the higher rates, also expressed his general hope that the railroads will hereafter "find it possible to avoid increases in rates not absolutely necessary to their continued operation." The withdrawn tariffs proposed what the railroads called "moderate increases in the existing depressed rates on crude and fuel oil." They were suspended by the commission from November 15 until June 15, 1943, the proceeding being docketed as I. & S. No. 5162.

Cars for Handling Christmas Mail

Among measures taken to meet holiday mail problem has been the re-equipping by the railroads of about 500 steel freight cars to put them in condition to handle mail on fast trains, according to a December 9 statement from the Post Office Department. The statement warns, however, that "last year it took more than 21,900 cars to handle the rush, and now the railroads are using their extra equipment to transport war materials and personnel." Thus, "the Christmas rush must be spread over a longer period so that available equipment can be used longer, if deliveries are to be made on time."

N. Y. C. Releases More Rail

During the first 10 months of the year, the New York Central released enough used rail to lay 716 miles of tracks. New rail laid in main line tracks, abandonment of operations on little-used branch lines and the removal of industrial side tracks produced 93,801 tons of rails. About half of this was suitable for re-use in laying tracks to serve war industry plants, army camps and storage depots, ship yards and other war projects; while 41 per cent was reroller rail, which will be processed for other use. The remainder constitutes a small part of the total of 406,962,000 lb. of metal scrap, chiefly iron and steel, collected on the New York Central during the 10 months.

Railroads Are Moving Two Million Soldiers a Month

The railroads of the United States are moving about two million soldiers a month and are doing it while carrying on their other business, according to Col. E. C. R. Lasher, deputy chief of the Traffic Control division of the Army Transportation Corps in a transportation forum broadcast over station WGN on December 3. Others taking part were Brig. Charles B. Young, assistant director of the Office of Defense Transportation; George A. Kelly, vice-president of the Pullman Company and Hugh Siddall, chairman of the Transcontinental Passenger Association.

"A year ago we were being asked to move about 200,000 men and their equipment a month," said Col. Lasher. "Today it's about two million a month. Don't forget either that when a soldier moves, all his equipment has to go with him so that he can dress himself, eat, drill, and if necessary, fight at a moment's notice."

He said that about 15 per cent of the day coaches and half of the sleeping cars are being used to transport some 50,000 troops daily.

Mr. Kelly said the job of moving 7 million American soldiers in sleeping cars this year is equivalent to moving every inhabitant in Texas and Arizona to some point 1,500 miles away. He said Pullman loads a sleeping car with troops on an average of every 2 minutes and 48 seconds.

Mr. Siddall said nation-wide gasoline rationing will impose a heavy civilian demand on the railroads at a time when they already are handling a record civilian and military business.

"During the coming holidays the railroads would like to give preference to official troop movements, to military personnel going home for Christmas and returning to camp, to families visiting in camp, and to civilians on war business," he said. "So we asked the general public to think twice and maybe three times before making plans for pleasure trips during the period December 12 to January 12."

A Little Less Paper Work

The War Production Board in an order dated December 5 exempted construction of railroad tracks from the provisions of Conservation Order L-41 which controls most types of civilian construction. The exemption was made because applications for laying tracks are already being handled by WPB's Transportation Equipment Division; but L-41 still covers buildings, tunnels, overpasses, underpasses, and bridges.

The WPB announcement stated that the exemption of track construction will eliminate "unnecessary paper work," in which connection the action was received in railroad circles as a step in the right direction. It was pointed out that despite the fact that rail and fastenings have been controlled under allocations orders, it has heretofore been necessary to clear track projects under L-41 also.

Taylor Wants Waterways Used To Relieve Railroads

"Railroad performance under war conditions has been remarkable and amply demonstrates—if any proof is necessary—that the railways are still the backbone of our transportation system," said Wayne Chatfield-Taylor, Under Secretary of Commerce, in an address before the Norfolk (Va.) Association of Commerce on December 8. "Regardless of what national policy may be worked out," he continued, "and what eventual relationship between competitive forms of transportation may be established in the future, every existing form of transportation must be fully utilized in this emergency."

The speaker stressed his belief that the inland waterway system could be used more extensively than it has been. How much longer the railroads will be able to continue at their present pace, he said, "is a matter of conjecture, especially in face of their inability to obtain additional equipment other than locomotives and some replacements of other equipment. Possible future curtailment of intercity trucking service would place a further burden on the railroads. Although there is no short-

age of trucking equipment at present, the supply of new vehicles is fast dwindling and it already is becoming difficult to obtain parts for vehicles now in operation.

"Although difficult to measure in the light of recent performance, there is a limit to the carrying capacity of the railroads," he continued. "It hardly seems the part of wisdom to stretch this capacity to the breaking point while other forms of transport are not fully employed. . . . While inland waterway traffic has increased during recent years, barge lines are still able to accommodate substantial additional tonnage. Inland shippers who formerly routed their traffic by water, and others who find it feasible to do so, should utilize this media of transport, thereby permitting the railroads to transfer vital rolling stock to areas not served by water lines."

ODT's "Don't Travel" Campaign Cuts Holiday Traffic

First reports on passenger travel over the Thanksgiving holiday week-end to reach the Office of Defense Transportation indicate that the "don't travel" campaign of that office is receiving wide public support, according to an ODT announcement of December 5.

"It is apparent," ODT Director Eastman stated, "that many persons gave up trips they normally would have made over the Thanksgiving week-end. As Christmas and New Year's approach, the urgent necessity of continued and wider public response to the 'don't travel' campaign must be emphasized.

"Persons contemplating pleasure trips at Christmas and New Year's should reconsider their plans," Mr. Eastman continued. "Christmas and New Year's fall this year on Friday. The temptation will thus be stronger than ever to spend one or both of these holidays and the week-end with family or friends in other cities. But travel is always heaviest at week-ends. This year, when equipment is not available to run the usual number of extra sections, railroads and bus lines may find it impossible to handle all passengers if the regular week-end traffic is supplemented by large numbers of holiday travelers."

Railway passenger agents reported that Thanksgiving traffic in the East and Middle West, although heavy, was less than the railroads expected, the ODT statement indicates, though comparative figures were not given out. Bus lines reported that travel dropped considerably from the Labor Day holiday level of this year, though a number of points indicated some increase over the 1941 Thanksgiving period.

ODT Orders Changes in Passenger Train Operations

Special orders of the Office of Defense Transportation affecting passenger operations on three widely separated railroads were issued December 3. Special Order ODT R-1 requires the Chicago, Burlington & Quincy to discontinue operation of its trains No. 41 and 44 between Edgemont, S. D., and Billings, Mont., and so effect a saving of 730 train miles daily. Equipment released by this order includes three locomotives, four baggage cars, one combination car, two coaches, three diner-lounge cars, and two Pullmans, the ODT announcement states.

The suspension of these trains became effective December 10. At the same time the railroad was authorized by Supplementary Order ODT 2-5 to substitute bus service, to be operated by its subsidiary, the Burlington Transportation Company, for the suspended trains. The result will be that the territory will be served by one train and two buses in each direction daily, instead of by one bus and two trains. No new equipment will be required, and the total increase in bus miles will be 434 daily, the announcement points out.

By Special Order ODT R-2 the Southern is required to discontinue operation of its trains No. 1 and 2 between New Albany, Ind., and Princeton, a distance of 106 miles. While only one locomotive and one combination car are released by this order for other service, it is stated that freight movement over the line will be expedited by suspension of these trains.

A joint operation by the International-Great Northern (Missouri Pacific subsidiary) and the Texas & New Orleans (Southern Pacific system) was ordered to become effective December 5 in Special Order ODT R-3. These roads are required to establish a daily shuttle train to operate between Houston, Tex., and a shipbuilding plant near Deepwater, about 12.5 miles. An ODT statement indicated that accommodations must be sufficient to meet the requirements of employees of the plant. It was pointed out that no permit under General Order ODT No. 24 is required for this operation, as it results from arrangements made by a government agency.

Banks Find ODT a Cautious and Reasonable Regulator

The usual difficulties encountered in connection with the framing and enforcement of administrative orders have been greatly minimized in the case of Office of Defense Transportation orders by such factors as the "caution and reasonableness of administration and administrators," according to Talcott M. Banks, Jr., general counsel of the Transportation Board of Investigation and Research, who discussed "Legal Problems of War Transportation" in a December 8 address before the Regional War Meeting of the American Bar Association at New York. Other favorable factors, he said, have been the "general recognition of the necessity" for such orders as ODT has issued, the "long experience in governmental regulation," and "high degree of organization among the carriers, particularly in the case of the railroads."

Speaking as "an observer rather than a participant" in the wartime transportation set-up, Mr. Banks contrasted the government's World War I policy of government operation with present arrangements, based, as he put it, on the principle that "the most effective transportation system for war can be created by taking full advantage of the knowledge, resourcefulness and patriotism of individual owners. He suggested that this may seem paradoxical, "in its setting of these recent years so marked by governmental expansion in the field of private business," but he added that "if so, it is a paradox of very hopeful significance, for if this theory works successfully, there can be no better tribute to individual responsibility."

Mr. Banks then outlined briefly the "great difficulties" in the transportation situation, and proceeded to tell how ODT has gone about its job, functioning under an order which "is pointed more to securing results by cooperation than to compelling obedience by measures of enforcement." ODT, he said, got started "auspiciously" when Joseph B. Eastman was chosen as director. Mr. Eastman's conduct "of this difficult office has been marked by a wise and practical caution, an absence of reorganizations, and devotion to the task in hand."

"ODT," Mr. Banks went on, "is not an agency of the Roman candle type, putting forth at quick intervals new orders which draw attention momentarily, then fade, or settle sizzling on some member of the audience. In virtually a year of operation, the Office has issued 25 general orders and a slightly larger number of special orders, dealing with particular situations in specific terms."

Listing points in the wartime transportation controls of special interest to lawyers, Mr. Banks told how carriers have been protected from the anti-trust laws where they cooperate with ODT on coordinating arrangements. He suggested that before the emergency is over there will be a careful appraisal of the economic value and possible peacetime application of such expedients. In other words, "there may be a new conception of competition and new treatment of the laws which within their special limits purport to make it mandatory."

Oil Shipments Up; Ickes Becomes Petroleum Administrator

Tank car shipments of petroleum and petroleum products into the East-Coast area during the week ended November 28 averaged 778,852 barrels per day, an increase of 10,103 barrels over the previous week's daily average of 768,749, according to Petroleum Administrator for War Harold L. Ickes. Mr. Ickes, who had been petroleum coordinator, got the new "administrator" title and broader powers from an executive order issued by President Roosevelt on December 2.

The order established the Petroleum Administration for War supplanting the former Office of Petroleum Coordinator for War which was established May 28, 1941. A PAW press release appraised the new set up as one which will "centralize war policies and actions of the government relating to petroleum." Among other assignments, it calls upon the administrator to "designate the quantity and kind of petroleum to be shipped and received by those engaged in the petroleum industry, and certify such designations to the Office of Defense Transportation for appropriate action in providing the necessary transportation."

Also, Mr. Ickes will "review all plans or proposals for the construction, extension, enlargement or inter-connection of petro-

leum pipe lines; subject to the over-all responsibilities of the Office of Defense Transportation, approve such plans or proposals as are, in his judgment, necessary to provide adequate supplies of petroleum for war and other essential uses and recommend to the War Production Board programs covering the amounts and kinds of materials needed for such pipe lines." In addition, he will "direct the physical operation of petroleum pipe lines to the extent of prescribing the quantity and kind of petroleum to be transported by and the direction of flow through such pipe lines"; although there is in that connection a proviso stipulating that "nothing herein shall be deemed to limit the functions and authority" of ODT with respect to "the provision of necessary additional transportation facilities and equipment, or to coordinate and direct domestic traffic movements."

Among the things which nothing in the PAW order shall be deemed to limit "in any way" are "the statutory powers of the Interstate Commerce Commission with respect to rates, charges, statistics, accounts, car service (including emergency service powers) or operating authority."

Reporting last week-end on progress being made on the construction of the Texas-East Coast pipe line, Mr. Ickes said in a December 6 statement that "less than 50 miles remain to be laid on the Texas-Illinois leg"; and he followed through on December 7 to announce that "letters of intent" had been issued to 12 contractors selected for the job of building the 857-mile eastward extension from Norris City, Ill., to the New York-Philadelphia area. Completion of this extension which will have terminals at Bayway-Bayonne, N. J., and Philadelphia, Pa., "is expected by midsummer,"

In his other role of solid fuels coordinator, Mr. Ickes announced that all-rail coal shipments to New England during the November 28 week were up 166 cars from the preceding week, totaling 5,947 cars or approximately 327,085 tons as compared with 5,781 cars or approximately 317,955 tons. Aggregate 1942 shipments through the November 28 week, Mr. Ickes said, were 33⅓ per cent ahead of those for the comparable 1941 period.

C. & E. I. Scrap Grows

Scrap metal turned in to the nation's salvage markets by the Chicago & Eastern Illinois for the period from December 7, 1941 to November 15 of this year, amounting to 25,558,000 lb., was equivalent to 5,370 lb. for every one of the 4,759 men and women employed by the railroad. Despite the intensive search for scrap metals which has been conducted over the entire property during the year, the amount of scrap turned in during the last 45 days of the period showed an increase, rather than a decrease, when compared with the monthly average at any other time since Pearl Harbor. From December 7, 1941, to October 1, 1942, scrap shipments totaled 20,460,000 lb., or an average of about 2,046,000 lb. a month; while in the month and a half following October 1, 5,098,000 lb. was shipped, which was equivalent to more than 3,398,000 lb. a month.

Materials and Prices

Following is a digest of orders and notices of interest to railroads, issued by the War Production Board and the Office of Price Administration since November 29.

Graphite—Conservation Order M-61, as amended December 4, extends control over the distribution and use of graphite to all kinds and grades. Madagascar Flake graphite was covered by the previous order. The amendment extends control to a lower grade than was previously covered and brings into control all graphite, imported and domestic, which will stand on a number 50 mesh screen. Beginning immediately, no person may process any graphite except with specific authorization by WPB; and no person, except a jobber, may deliver or accept delivery of any crucible or any other product containing strategic graphite without specific authorization. Preference ratings will hereafter have no bearing on delivery of crucibles containing strategic graphite.

Motors—General Conservation Order L-221, effective December 10, requires purchasers of electric motors to show that the horse power of the motor applied for is no greater than that required to do the job. As a means of stopping the practice of over-motoring, the order applies measurements by which the actual power requirements may be related to the horse power of the motor applied for by the purchaser. The order also prohibits the delivery or acceptance of motors, unless they comply with certain standard specifications and are of the simplest practicable mechanical and electrical design. It also requires the purchaser to certify why he must have a motor of a special type, and restricts the use of special types to the conditions and the purposes for which they are required. Applicants for motors and generators must certify that every reasonable effort has been made to adapt idle motors or generators in possession, to obtain used ones for this purpose, and to repair or recondition existing equipment. Where used equipment cannot be secured within a reasonable time by the applicants, needs are to be made known to WPB's Surplus Used Equipment Branch.

Paper—Conservation Order M-241, as amended November 30, permits producers of paper and paperboard to carry forward their quota from a previous month or borrow from a future month to the extent of 15 per cent in each case. The order previously required that production of paper or paperboard in any month be limited to the average monthly production during a base period of six months ending September 30, 1942. In no event may the production of any mill during any calendar quarter after January 1, 1943, exceed three times the average monthly production during the basic six months' period.

Railroad construction—Conservation Order L-41, as amended December 5, controlling most types of civilian construction, excepts construction of railroad tracks from the provisions of the order, but not buildings, tunnels, overpasses, underpasses or bridges.

Applications for the laying of trackage already are handled by the Transportation Equipment division and the change was made to eliminate unnecessary paper work required by the Bureau of Construction, which administers L-41. As amended, the order prescribes that no person shall begin construction or order, purchase, accept delivery of, withdraw from inventory or in any other manner secure or use material or construction plant in order to begin construction, unless the construction is to be the property of the Army or Navy of the United States, the United States Maritime Commission, the Panama Canal, the Coast and Geodetic Survey, the Coast Guard, the Civil Aeronautics Authority or the Office of Scientific Research and Development; or consists of any building, structure or project which is used directly in the discovery, development or depletion of mineral deposits; or the construction is of a type subject to the provisions of any order in the M-68 series relating to the production and distribution of petroleum; or the construction is of railroad tracks, together with the necessary appurtenances thereto, but not including buildings, tunnels, overpasses, underpasses or bridges.

Stainless steel—Order M-126, as amended November 30, permits the use of stainless steel in several products needed by the armed forces, but makes no revisions in the restrictions on the uses for railroads. All items subject to the order are listed, with the dates beyond which manufacture and assembling was discontinued.

Prices

Asphalt tile—Maximum Price Regulation 276, effective December 5, establishes dollars-and-cents maximum prices for manufacturers' sales of asphalt tile. The prices are substantially the same as those prevailing in October, 1941. Sales of the tile had been covered by the General Maximum Price Regulation and by Maximum Price Regulation 188.

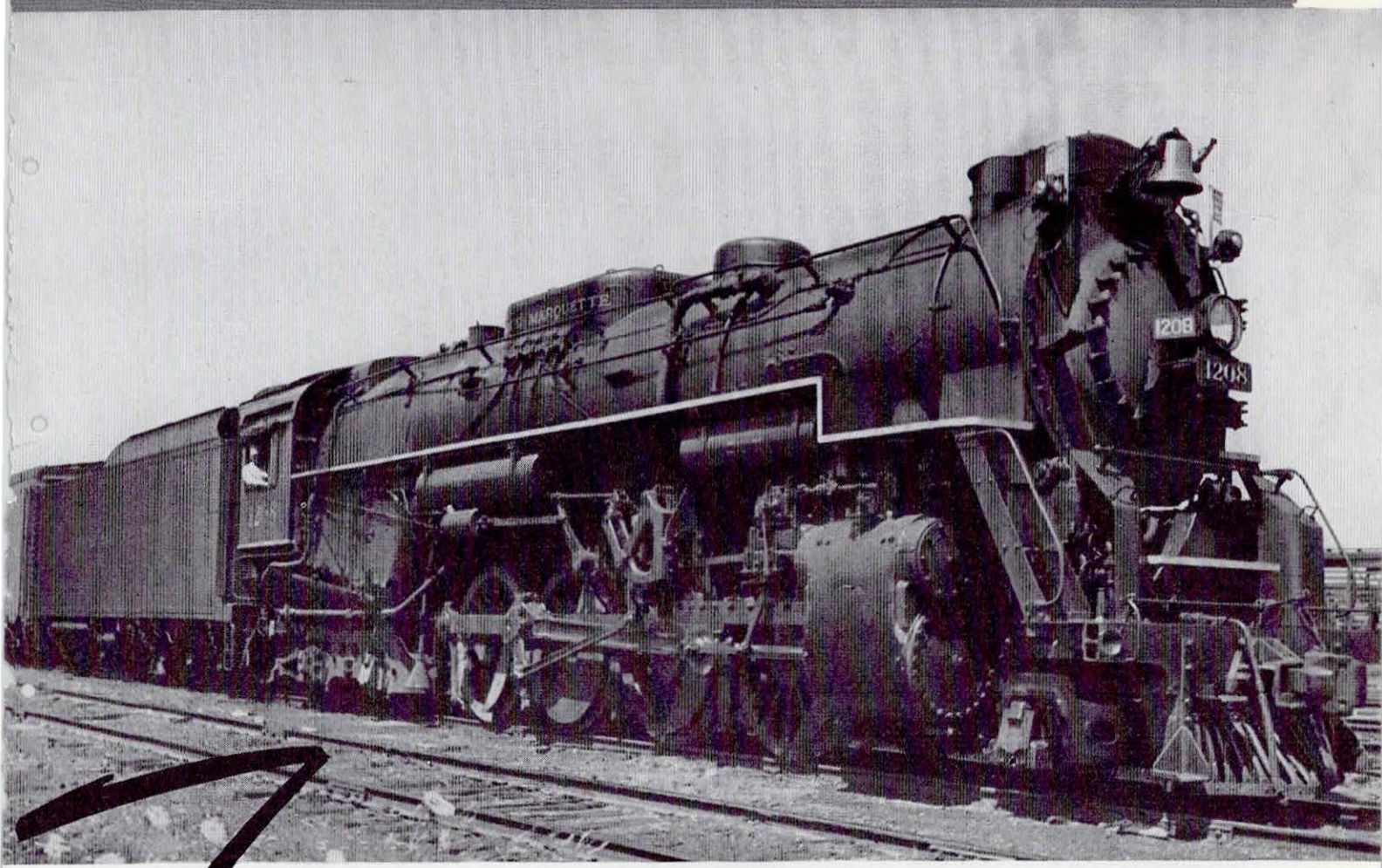
Pig iron—Amendment No. 3 to Revised Price Schedule No. 10, effective December 4, establishes a maximum basing point price of $24 per gross ton for basic pig iron at Duluth, Minn. The price is 50 cents per ton below the established basing point base price of $24.50 for No. 2 foundry pig iron at Duluth, and thus bears the customary relationship to the foundry iron price. The price was petitioned for by the American Steel and Wire Co. of New Jersey, a subsidiary of the United States Steel Corp., which moved a blast furnace from Joliet, Ill., to Duluth, and is operating it as a lessee of the Defense Plant Corp. The blast furnace at Duluth is expected to produce foundry and malleable grades of pig iron, and may also make basic pig iron if directed by WPB. Duluth was already a basing point for No. 2 foundry and malleable grades.

Plywood—Revised Maximum Price Regulation No. 13 (Douglas fir plywood), effective December 5, extends the scope of the maximum price regulation covering Douglas fir plywood to the wholesale and retail levels, and brings price regulation for the plywood in line with the provisions of a WPB limitation order and simplifies and clarifies former provisions of the original Maximum Price Regulation No. 13 by rewording and rearrangement. For plywood distribution plants, the ceiling prices are composed of the basic f. o. b. mill price, plus transportation from the mill to the distribution plant, plus a markup of 20 per cent on sales of $200 or more and of 25 per cent on sales of less than $200. Ceilings for other distribution warehouses and yards are computed in the same manner, except that the maximum permissible markup is 33 per cent instead of 20 and 25. No changes are made in the basic mill shipment prices, but certain alterations and additions are made to the shipment provisions. A definition of direct mill shipments includes the interpretation that a sale of plywood by a distribution yard or warehouse, which does not have the plywood in stock at the time of sale and acquires it from a mill, is a direct mill sale. Dollars-and-cents additions to maximum prices are provided for long lengths and wide widths now permitted in certain grades of plywoods under Limitation Order L-150, as amended October 8. These additions maintain the usual price differentials of the industry, thus preserving the normal relationship of selling prices. The revised regulation also sets up a method for pricing plywood rejected in the standard grading or cut back in odd sizes from rejected panels.

Scrap—Amendment No. 9 to Revised Price Schedule No. 4 (iron and steel scrap), effective December 1, permits sellers of iron and steel scrap to pass on to consumers the 3 per cent property transportation tax imposed under the 1942 revenue act, and makes other adjustments in transportation charges with respect to scrap originating from railroads operating in a basing point. The scrap is at its point of delivery to the consumer when it has arrived for unloading at the plant of the consumer. Transportation charges mean the established charges for transporting the scrap to the point of delivery by the mode of transportation employed, and shall include any tax imposed upon the transportation charges from shipping point to point of delivery and any increase in transportation charges resulting from a rise in rates which became effective after March 14, 1942. Where specific amounts of allowable transportation charges are mentioned, there may be superadded 6 per cent of such allowable charge and the amount of the tax on such charge. In no case shall the maximum delivered price include any charge or cost incurred in unloading the scrap at the point of delivery or in subsequent handling.

News Department continued on next left-hand page

STEAM POWER IS STILL SUPREME



Feeding the Production Lines

OF CHICAGO AND DETROIT

Flowing into various assembly plants on an exacting schedule are thousands of parts and sub-assemblies made in scores of cities.

Keeping this production stream moving on schedule is the war-time task of the American Railroads.

The steady out-pouring of finished planes, tanks, guns and ships is visual evidence of the railroads' effectiveness in supplying adequate transportation.

The movement of freight between the vital production cities of Chicago and Detroit has placed an unusual demand upon the Pere Marquette Railroad. Modern steam power is essential to this operation and Lima-built locomotives of the 2-8-4 type shown above are doing an outstanding job of "keeping 'em rolling".

Steam is still supreme for fast, economical transportation.

LIMA LOCOMOTIVE WORKS LIMA LOCOMOTIVE WORKS INCORPORATED INCORPORATED, LIMA, OHIO

GENERAL NEWS

I.C.C. Bureau Ups Estimate of '42 N.O.I.

Now says it may be $1,552 millions with net income reaching a billion

Increasing the estimate made a month ago, the Interstate Commerce Commission's Bureau of Transport Economics and Statistics now calculates that net railway operating income for 1942 may reach $1,552,000,000, and it thinks it "not improbable that the net income, after interest, rentals, and all taxes, including income taxes, will exceed one billion dollars." These estimates are given in the December issue of the Bureau's Monthly Comment on Transportation Statistics, the November issue having estimated the 1942 net railway operating income at 1.4 billion dollars, as noted in the *Railway Age* of November 14, page 796.

The latter had assumed that fourth-quarter expenses would reflect the same increases over the comparable 1941 months as had September's; but the upward revision came from recognition of the fact that such percentage increases over the previous year were lowered with October, because the present wage scale "was substantially reflected for the first time in October, 1941."

The Bureau points out also that a net railway operating income of $1,552,000,000 would be 7.76 per cent "on an assumed value of 20 billions of dollars." It warns, however, that its estimate "is obviously subject to some error," adding that it makes "no allowance for any possible undermaintenance represented in expenses as reported."

Supporting its prediction that 1942's net income may exceed a billion dollars, the Bureau has this to say: "For the first nine months of this year the net income as reported was $571,971,991. For October this item has not been reported but may be estimated at $135,000,000 . . . making the 10 months' net income about $707,000,000. One method of raising this to a calendar year's total is to increase the net income for November and December, 1941, by the same percentage that the October net income increased, which was 152 per cent, and adding the result to the above 10 months' total. This gives $920,700,000. Another method is to add to the 10 months' net income ($707,000,000) an allowance for the last two months obtained by noting the difference between the 10 months' *net railway operating income* (*$1,160 millions*) and the net railway operating income for the calendar year 1942 as estimated in an earlier paragraph ($1,552 millions). This method gives $1,099,000,000. An average of the two estimates is $1,009,800,000."

Meanwhile, the gross for the 12 months ended October 31 totaled $7,009,695,661, and the net railway operating income $1,309,437,887. For October, the gross was up 44 per cent from the previous year, reflecting increases of 33.5 per cent in freight revenue and 156.5 per cent in passenger revenue. As the Bureau points out, the freight revenue's percentage increase over 1941 remains "nearly stable" from month to month, but the percentage increase in passenger revenues keeps rising. For September it was 141.2 per cent.

October's operating ratio was 55.9 as compared with 69.8 in October, 1941; the 10 months' ratio 62 as compared with 67.5.

It is pointed out that the 10 months operating expenses include depreciation charges amounting to $207,256,627, and charges for the amortization of defense projects to the extent of $65,707,761. Also, allowances for deferred maintenance of $1,779,355, "but this account has been used to only a limited extent."

That there have been wide differences in the revenue trends of the several districts is indicated by one of the statement's tables. The 10 months increase in freight revenue, as compared with 1941, has ranged from 41.6 per cent in the Southern region to 6.3 per cent in the Pocahontas region. The Pocahontas region's net railway operating income for the 10 months was down 20.7 per cent, while that of the Western district was up 61.8 per cent. Railway tax accruals for the 10 months totaled $1,001,328,058, including $633,741,997 of federal income, surtax and excess profits taxes. "Various railways," the Bureau says, "reported substantially smaller income tax accruals for October than for September, indicating a correction of previous over-accruals." It anticipates that further adjustments "are likely to be made in the returns for the next two months."

Strike on National of Mexico Averted

A strike on the National Railways of Mexico which was called for November 21 and which was postponed, has been called off as a result of an agreement between the railway and its workers. Under the settlement, the company agrees to increase salaries 10 per cent, effective August 1, 1942. Other demands will be studied by a mixed commission and the matters which cannot be settled by it will be handled by the Board of Conciliation and Arbitration, the conductors' contract must be taken up within 30 days, the enginemen and firemen's contract must be terminated within 90 days, and the company will pay salaries every 15 days instead of every 10 days.

OPA Seeks General Reduction In Rates

Ex Parte 148 spring increases called an unnecessary burden on nation

Making a direct attack on railroad rates established as a result of the decision of the Interstate Commerce Commission in Ex Parte 148, Price Administrator Leon Henderson on December 4 filed with the commission a petition to reopen the proceedings in that case and discontinue the increases in freight and passenger rates put into effect in the early part of this year. The petition was filed on behalf of the Office of Price Administration and also of James F. Byrnes, director of economic stabilization, and follows a number of OPA efforts to stop specific rate increases since the general increases became effective.

Present freight rates were established March 18 of this year, while increased passenger fares went into effect February 10. As reported in *Railway Age* of March 7, page 484, the changes in freight rates and charges authorized by the commission amounted to an increase of six per cent on many commodities and of three per cent on certain "basic or raw" materials, including sand, gravel, slag, and agricultural products, including live stock, although special provisions limited the increase on coal and coke to a range of three to six cents per ton. No increase was allowed on iron ore. The increase in passenger fares amounted to ten per cent.

The OPA petition calls for action by the commission to reconsider and discontinue these increases on two grounds: (a) They yield "unreasonably high net earnings" to the railroads, and (b) they "are incompatible with the principle underlying the national economic program."

Mr. Henderson's petition points out that the commission, in authorizing the increases, announced that it would hold the record in the case open to consider readjustments or corrections if circumstances should develop to warrant them. When the railroads sought I. C. C. authority to increase rates, an OPA statement adds, they made it clear that "their proposal was not intended to improve their profit position." They were "well satisfied," it says, with the 1941 record of earnings, and sought the increases only to meet increased costs resulting from the wage increases of December, 1941, and increased costs of materials and equipment.

"At that time," the OPA statement continues, "no one could anticipate the great increase in net railroad revenues which have come about because of business expansion, the stabilization of prices affecting

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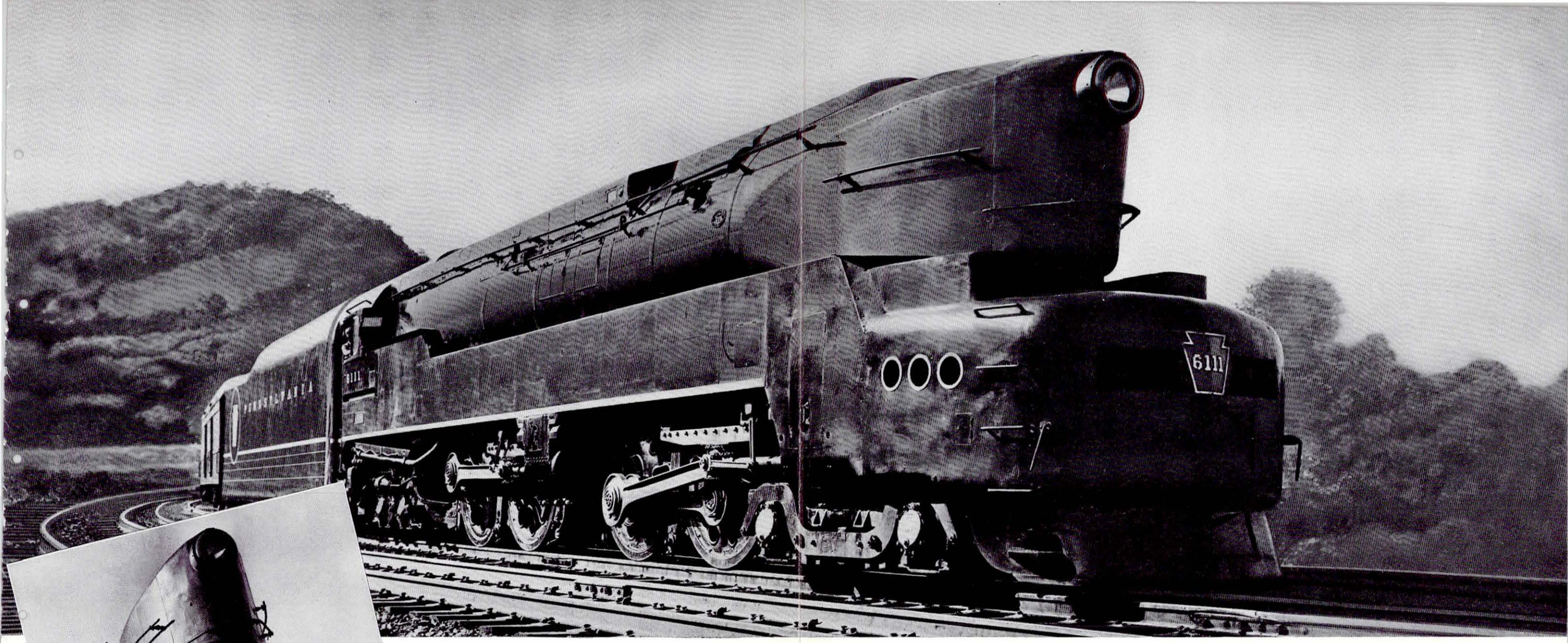

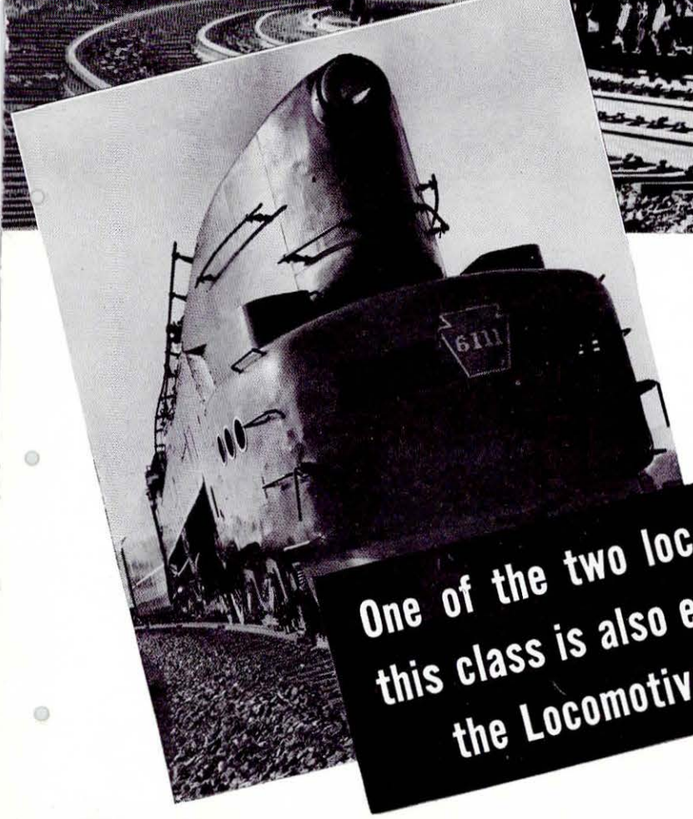

One of the two locomotives in this class is also equipped with the Locomotive Booster.

THE PENNSYLVANIA T-1

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Through the application of The Franklin System of Steam Distribution it is possible to obtain the maximum productive power of the boiler.

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railroad costs, and the economies that have been achieved through compliance with the orders of the Office of Defense Transportation." In another place it asserts that "even had the increases successfully sought by the railroads not been granted, net railway operating income for the first nine months of this year would have been approximately 42.4 per cent above the corresponding period of 1941 when lower rates were in effect."

Though the Office of Price Administration was set up in April, 1941, it took no part in the proceedings leading to the general wage increases ordered December 2 of that year. When the railroads requested authority to increase rates to meet these added wage costs, the OPA was represented at I. C. C. hearings, but took no position with respect to the reasonableness of the requests. On March 12 of this year, however, the first manifestation of its rapidly growing concern with railroad rates appeared when a suspension petition was filed with the commission after its decision in the case had been handed down. This petition was denied by the commission March 16, and the allowed increases in freight rates went into effect. At that time the OPA sought suspension of the increase on certain commodities, such as cement, copper ore, iron and steel scrap, lead ore, lumber, petroleum, rubber scrap, and sulphur, on most of which price ceilings had been established.

Since then, the OPA's present petition states, the Price Administrator "has kept informed of the financial condition of the railroads and has analyzed the effects upon the national economy and upon the purposes of the Emergency Price Control Act of 1942 of the increases authorized." He did this so that "when circumstances should warrant such action," he could ask the commission to discontinue the increases.

The petition points out that sacrifices imposed by price control must be fairly distributed, so that "pressures occasioned by the imposition of price ceilings in the face of rising costs" may be distributed where the burden will be felt least. Rates charges by railroads are called "important and often critical elements of costs" affecting the equitable operation of price control measures, and the petition states that it is "wholly inequitable" to allow the railroads to share in the benefits of price control without also requiring them "to bear their share of the burden imposed by the price stabilization program."

Exhibits accompanying the OPA petition are said to indicate that annual "savings" to railroads which result from OPA price control activities total about $610,000,000 in purchases of petroleum, coal, rails, and "tin plates." To support this contention comparisons are drawn between the movement of prices on certain supplies between August, 1939, and October, 1942, on the one hand, and a corresponding period during World War I on the other. These figures are asserted to show that prices of rails have been held stationary under OPA control, while they increased 33 per cent in the World War I period; petroleum has increased only 17 per cent, as compared with 75 per cent; coal has increased 15 per cent, as compared with 180 per cent; and angle bars have not changed in price, as compared with an increase in the earlier period of 117 per cent.

"In addition," the petition continues, "to the general necessity of treating the railroads as a part of the economy subject to the national stabilization program, sharing both in its benefits and in its obligations, there is the pressing requirement that specific and unavoidable cost-raising factors relating to transportation be offset as fully as possible through the reduction of transportation rates."

Moreover, it states, the increased freight rates to which objection is made "represent a material addition to the cost of the war. At least half of this increased transportation cost is being borne directly or indirectly by the federal government. The government, of course, bears these increases on its own traffic. In addition it bears this burden with respect to traffic moving for the account of" contractors operating on cost-plus programs.

"The pressing need for relief" urged in the petition is said by the OPA to pertain to "policies which form a component part of the pattern designed by this government for effective prosecution of the war," and for that reason "expedition in decision" is asked of the commission. A supporting petition was filed at the same time by the Department of Agriculture, in which the increases allowed in rates on farm products are particularly assailed. This petition asserts that the railroads have earned "enough revenue to more than offset their own professed needs" as a result of wartime increases in business.

A decision of the U. S. Court of Appeals for the District of Columbia in a case involving OPA control of common carrier rates last week was hailed by Price Administrator Henderson as establishing a legal precedent for the application of the anti-inflationary provisions of the Price Control Act to such rates. The case involved an increase in the fare charged between Washington, D. C., and a nearby suburb by a local bus company, which was authorized by the Interstate Commerce Commission as the result of an application made before the passage of the Price Control Act, though the increase did not become effective until after its passage. The federal district court held that the increase, under the circumstances, was properly authorized, but the Court of Appeals decided that the bus company should have conformed with the requirements of the Act, and the Executive Order making it effective, that the carrier should give 30 days' notice to the OPA of proposed rate increases before making them effective. The bus company has announced its intention of appealing this decision to the United States Supreme Court.

Awards for Safety in Transportation

The late Arthur Williams of the New York Edison Company, who for so many years headed the American Museum of Safety, provided in his will for a fund which has been used for the establishment of the Arthur Williams Memorial Medal. The initial awards of the medal were made for distinctive achievement in safe transportation; one in the marine field, another for the airways and the third in the railroad industry. The first awards were made at a dinner at the Metropolitan Club in Washington, D. C., on December 8.

Rail transportation safety medals in duplicate were awarded to W. Averell Harriman and E. Roland Harriman, for continuing the inspiring leadership of two generations in safe transportation. The presentation was made by Joseph B. Eastman, director, Office of Defense Transportation, who pointed out that it was the improved safety records of the railroads that was helping them so successfully to meet the demands made upon them in the present emergency. E. H. Harriman, during his lifetime, went to unusual lengths to insure safe operation of the railroads under his direction. After his death, the late Mrs. Mary W. Harriman established the Harriman Safety Award, which has been so instrumental in stimulating interest in safety on the part of the railroads. At her death her sons, following in the footsteps of their parents, have continued the Harriman Memorial Medals and have otherwise interested themselves in safe rail transportation.

The marine transportation safety medal was awarded to Rear Admiral Emory S. Land for his outstanding contribution to the conservation of human life through the safe construction and operation of ships. The presentation of the medal was made by John Lord O'Brian, general counsel, Office of Production Management. The medal for air transport safety was awarded to the Pan-American Airways System for pioneer service insuring utmost safety in overseas flight. The presentation was made by L. Welch Pogue, chairman of the Civil Aeronautics Board, and the award was received by Juan T. Trippe, president of the Pan-American Airways.

Dr. Donald B. Armstrong, president of the Museum, acted as toastmaster. The award committee consisted of Frank L. Jones, chairman; Alfred E. Smith, Judge R. V. Fletcher, Howard Coonley, Julien H. Harvey and Lew R. Palmer.

Illinois Commission Orders Terminal to Add to Service

The Illinois Commerce Commission, on December 1, ordered the Illinois Terminal to maintain and increase its service on its lines between Decatur, Ill., and Danville and between Decatur and Bloomington, which lines the War Production Board had ordered scrapped. The railroad petitioned the commisson on July 9 for permission to discontinue service on these lines and when the petition was denied, the company disclosed its negotiations with the War Production Board which requisitioned the rails and other materials. The commission objected to the action taken by W. P. B., the order to dismantle was postponed and the commission directed the railroad to show cause why it should not improve its service.

In its order of December 1, the commission stated that the facilities were needed to transport workers to war plants, that the railroad's present service could not reasonably be supplanted by bus operations and that great hardships would be thrust upon the shippers depending upon the lines

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SECURITY CIR

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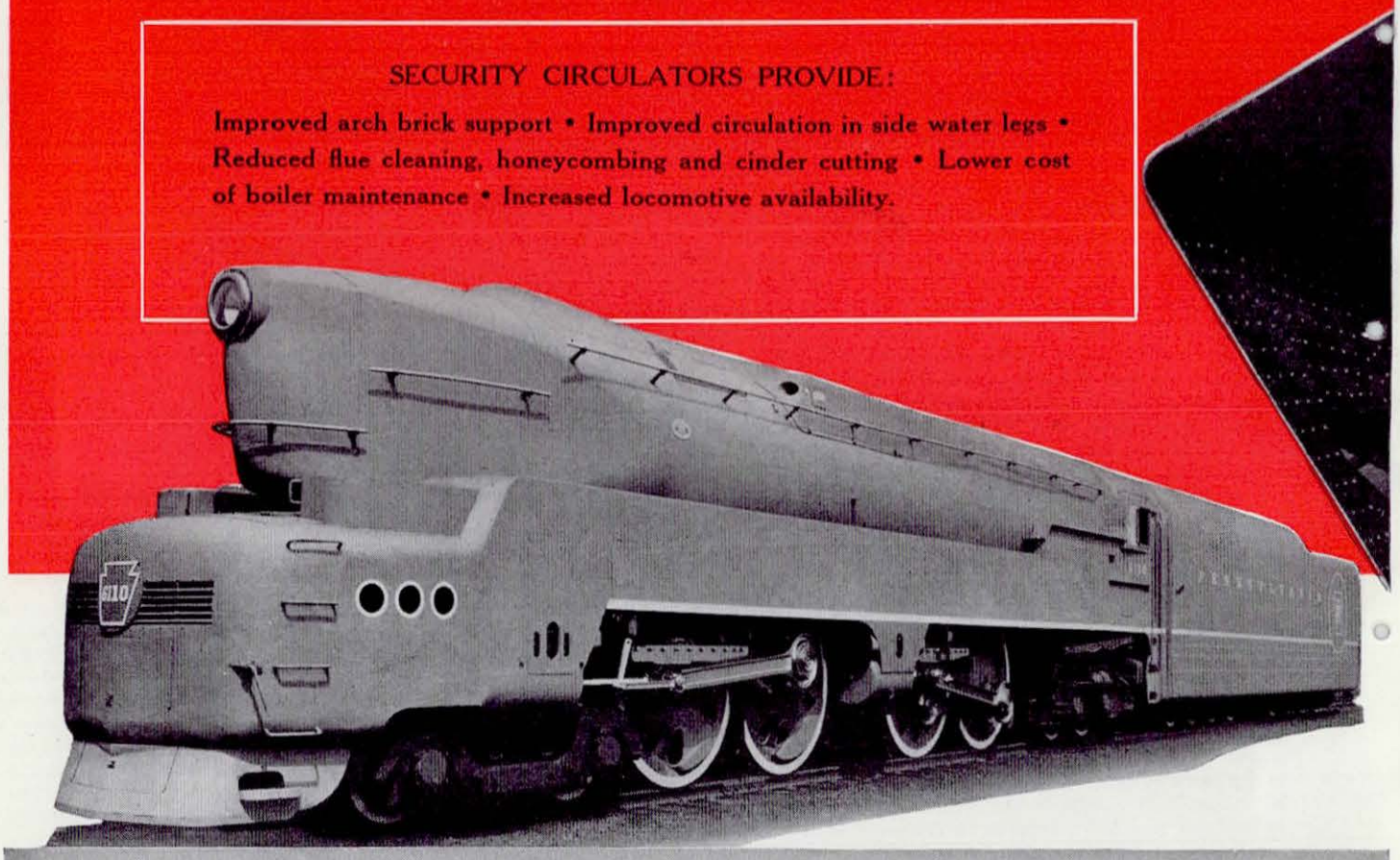
The fireboxes of the two new Pennsylvania Railroad Engines of the 4-4-4-4 type, designated the T-1's, are equipped with American Arch Security Circulators.

SECURITY CIRCULATORS PROVIDE:

Improved arch brick support • Improved circulation in side water legs • Reduced flue cleaning, honeycombing and cinder cutting • Lower cost of boiler maintenance • Increased locomotive availability.



AMERICAN ARCH

Security Circulator Division

CULATORS

LOCOMOTIVES

Interior view of firebox of the Pennsylvania's 4-4-4-4 type locomotive showing positioning of five Security Circulators.

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to be abandoned. The order also pointed out that rails and other material to be salvaged would not bring more than $700,000 as scrap, while the abandonments would lower the capitalized value of the whole railroad from $33,500,000 to $29,000,000.

Two Western Lines Reserve Seats for Holidays

The Illinois Central and the Pacific lines of the Southern Pacific have adopted a seat reservation plan for the holidays. All seats on all Illinois Central trains will be reserved during the holiday period from December 15 to January 10 and ticket sales will be limited to the space available. The plan is the same as that used to control week-end travel between Chicago and Champaign, Ill., during the 1942 football season.

Sun Valley Will Close for War Period

Sun Valley, the summer and winter resort operated by the Union Pacific near Ketchum, Idaho, will close on December 20 for the duration of the war as a result of manpower, food, fuel and transportation shortages. The closing is being effected despite heavy reservations throughout the winter and persons holding reservations are being notified of the closing. Sun Valley was built in 1936 on the site of a sheep ranch in the Sawtooth Mountains from an idea conceived by W. A. Harriman, chairman of the board of the Union Pacific.

Western Lines Appoint Conference Committee

The Association of Western Railways has appointed a Conference committee to represent the Western lines in the handling of the wage increase demands of the non-operating employees. The committee consists of D. P. Loomis, executive director of the association; F. W. Green, chief operating officer of the St. Louis Southwestern; J. Y. McLean, director of labor relations of the Chicago, Rock Island & Pacific; J. G. Torian, manager of personnel of the Southern Pacific; and L. L. White, chief operating officer of the Chicago & North Western.

New Inquiry Bureau Head With I. C. C. Since 1906

The appointment of Edgar M. Ebert to the position of director of the Bureau of Inquiry of the Interstate Commerce Commission was announced in *Railway Age* of December 5, page 938. Mr. Ebert is a native of Washington, D. C., where he was born November 22, 1887. After attending local schools he entered the service of the Interstate Commerce Commission June 18, 1906, as a clerk and stenographer, and since that time he has been continuously in the employ of the commission. In 1912, following his graduation from the National University law school, Mr. Ebert was admitted to the bar of the District of Columbia.

At that time he was attached to the staff of the commission's Bureau of Inquiry, to which he was transferred in 1908, shortly after the bureau was organized. For a period of 11 months in 1914 and 1915 he was private secretary to Commissioner Hall, but then returned to the Bureau of Inquiry as special agent, a position which he occupied until 1922. He then was an attorney for the bureau until 1930, when he was appointed assistant director. This position he held until he received his present appointment as director, after having served under every director of the bureau since its creation.

Vacations Dispute Settled

Wayne L. Morse, who was selected to arbitrate the controversy, has submitted his report on the disputes between the railroads and their non-operating employees with respect to the application of the vacations-with-pay agreement which was part of last December's mediation settlement of the general wage case. Some 20 questions were in issue, and they are expected to be settled on the basis of the Morse report.

Mr. Morse had served as chairman of the five-man emergency board which reported on the wage case and later brought about the mediation settlement when the labor organizations refused to accept its report. He is now one of the public members of the National War Labor Board.

Short Line Operating Employees Allowed Wage Increase

By an order issued December 3, the National War Labor Board has extended to operating employees the provisions of its order of November 16, reported in *Railway Age* of November 28, page 898, thus authorizing railroads that were not parties to the general wage agreement of December, 1941, to grant such employees increases which do not exceed the increases allowed under the terms of that agreement. The order does not require any railroad to grant a wage increase, it is pointed out, but approves any agreement made to accomplish an increase so long as its terms do not exceed those of the general agreement.

S. P. Affiliate Gets Additional Truck Certificates

Disposing of 13 applications of the Pacific Motor Trucking Company, the Interstate Commerce Commission, Division 5, has granted that Southern Pacific affiliate certificates covering common-carrier trucking services over various additional routes between Arizona, California, Nevada, and Oregon. Two of the applications involved "grandfather" rights, while favorable action on the others came upon showings of public convenience and necessity.

"With the grants herein," the commission said, "applicant will have, with few gaps, an operation extending from Portland southward to San Francisco, thence east through Reno, Nev., virtually to the eastern boundary of Nevada and south and east through Los Angeles, Calif., and Yuma, Phoenix, and Tucson, Ariz., to El Paso, Texas. Thus the total operation has evolved since 1938 and 1939 from a group of small disconnected operations, most of them limited to a single state, to a group of much larger operations, some of them extending through several states."

With respect to conditions designed to insure that the operations remain auxiliary to S. P. rail service, the commission imposed the so-called key-point restrictions in specific instances "wherever they appear appropriate and practical, viewing the proposed operation and connecting operations as a whole." The key-point restrictions prohibit the handling of shipments by motor vehicle between specified points where train services are considered adequate; they have recently been imposed by the commission instead of the more restrictive prior-or-subsequent-haul condition which was formerly imposed to provide that shipments handled by highway must be moving on through bills of lading and involve a prior or subsequent haul by rail.

Freight Car Loading

Loadings of revenue freight for the week ended December 5 totaled 759,621 cars, the Association of American Railroads announced on December 10. This was an increase of 16,088 cars, or 2.2 per cent, over the previous week, which included the Thanksgiving holiday, a decrease of 73,754 cars, or 8.9 per cent, below the corresponding week last year, but an increase of 21,108 cars, or 2.9 per cent, over the comparable 1940 week.

Loading of revenue freight for the week ended November 28, which included the Thanksgiving holiday, totaled 743,533 cars and the summary for that week, as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loadings

For the Week Ended Saturday, November 28

District	1942	1941	1940
Eastern	135,679	181,047	157,795
Allegheny	158,758	184,246	154,667
Pocahontas	50,051	57,588	48,273
Southern	113,251	123,940	107,915
Northwestern ..	96,920	126,616	91,074
Central Western	117,676	131,915	117,586
Southwestern ..	71,198	60,828	51,215
Total Western Districts	285,794	319,359	259,875
Total All Roads	743,533	866,180	728,525
Commodities			
Grain and grain products	39,078	40,902	33,689
Live stock.. ..	17,133	14,647	15,739
Coal	153,563	164,310	143,746
Coke	13,785	13,370	12,687
Forest products	36,421	44,447	38,521
Ore	44,453	47,396	17,803
Merchandise l.c.l.	81,807	152,503	149,915
Miscellaneous ..	357,293	388,605	316,425
November 28..	743,533	866,180	728,525
November 21..	836,427	799,386	733,488
November 14..	826,601	883,890	745,295
November 7..	829,490	873,582	778,318
October 31.....	890,469	894,745	794,797
Cumulative Total 48 Weeks....	39,984,276	39,243,794	33,639,939

Teal Joins Transport Board Staff

Jonathan E. Teal, transportation engineer of the Chesapeake & Ohio, has joined the staff of the Transportation Board of Investigation and Research, where he is serving as principal transportation specialist in connection with the Board's studies of the relative economy and fitness of rail, motor, and water carriers.

Mr. Teal entered railroad service in the engineering department of the Baltimore & Ohio in 1905, went with the Missouri Pacific in 1909 and returned to the B. & O. in 1911 to remain until 1923, when he went with the C. & O. as special engineer on the staff of the vice-president in charge of

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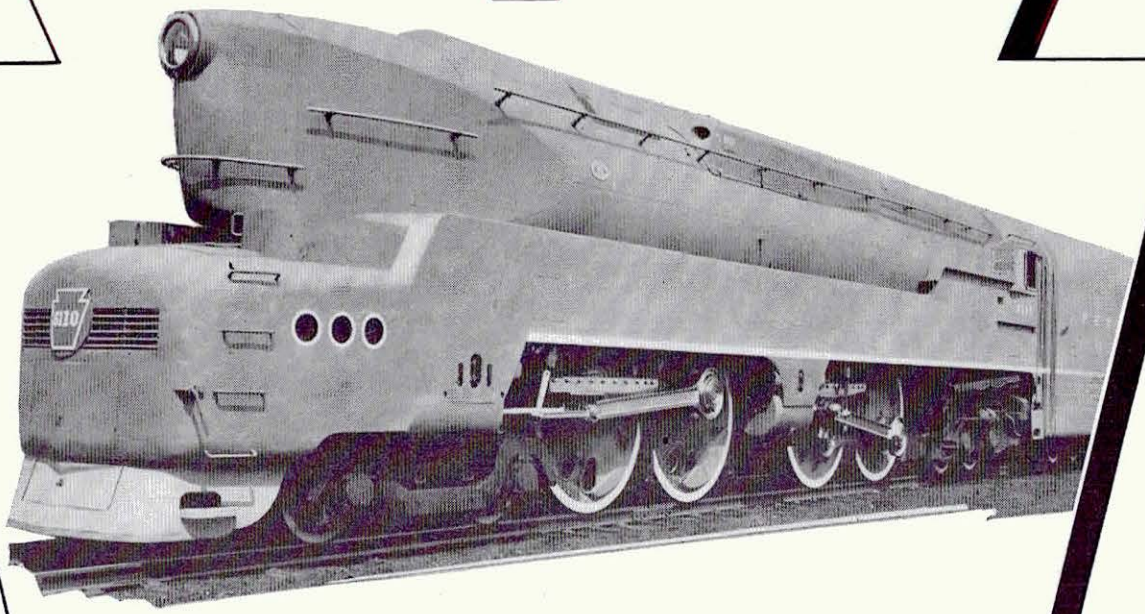
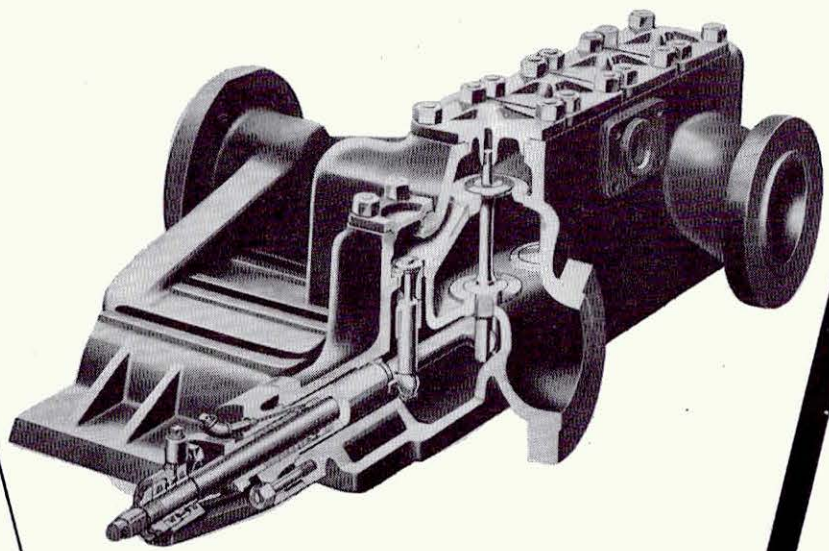


PENNSYLVANIA RAILROAD'S T-1 CLASS 4-4-4-4 TYPE LOCOMOTIVE



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operation. He has been transportation engineer since 1934. Active in the American Railway Engineering Association, Mr. Teal has served as chairman of its committee on economics of railway operation, vice-chairman of the special committee on complete roadway and track structure, and vice-chairman of the committee on economics of railway location. He has also been a member of the committee on standardization.

I. C. C. Approves More Contracts for Temperature Control Services

The Interstate Commerce Commission has approved 15 additional contracts covering protective services, i. e., temperature control services for the protection of perishable freight against heat or cold. The action came in a supplemental report in the Ex Parte No. 137 proceeding which was instituted after the Transportation Act of 1940 gave the commission jurisdiction over the matter.

Commissioner Johnson, dissenting in part, took the same position that he has in the prior reports, objecting to the approval of contracts between non-proprietary railroads and the Fruit Growers Express Company which carry prices 10 per cent higher than those assessed against proprietary roads. Thirteen of the 15 contracts approved by the majority were of that nature, Mr. Johnson noted.

Railroad Enthusiasts

The New York Division of the Railroad Enthusiasts, Inc., held its third annual dinner in the main dining room of the New York Advertising Club on the evening of December 5. Edward A. Hansen (trip chairman when trips were to be had) was the toastmaster. B. S. Voorhees, assistant vice-president, improvements and developments, New York Central System, was the guest speaker. He pointed out that the railroads are alert to post-war problems and are studying them from all angles.

Roy V. Wright, managing editor, *Railway Age*, will be the speaker at the next regular meeting of the New York Division on December 18, in Room 2728, Grand Central Terminal Building. He will discuss Railroad Mechanical Department Bosses. Officers for 1943 will be inducted into office as follows: William S. Webber, chairman; John A. Knauff, vice-chairman; John C. Blom, secretary, and Miss Leigh Coriell, treasurer.

Representation of Employees

The National Mediation Board has certified results of two recent elections on the Pennsylvania where the American Train Dispatchers Association won the right to represent power directors (including assistant power directors and extra power directors), load dispatchers, movement directors, assistant movement directors, and powermen.

On the Bessemer & Lake Erie, the Brotherhood of Locomotive Firemen & Enginemen retained the right to represent locomotive engineers in the face of a challenge from the Brotherhood of Locomotive Engineers; while on the Norfolk & Portsmouth Belt the Engineers were similarly in the face of a challenge from the Firemen. Maintenance of way employees of the Texas Electric have chosen the Brotherhood of Maintenance of Way Employees.

On the Buffalo Creek & Gauley, four elections were held recently. The United Mine Workers of America won the right to represent locomotive firemen, hostlers, and hostler helpers; while the Employees League of the Buffalo Creek and Gauley Railroad Company won two elections, establishing its right to represent road brakemen, baggagemen, and flagmen, and maintenance of way employees. Balloting among the shop crafts resulted in certification of the United Mine Workers as representative of the blacksmiths, their helpers, and apprentices; while the carmen, their helpers, and apprentices chose the Employees League. The board was unable to make a certification for machinists, their helpers, and apprentices, since no contestant received a majority of the votes.

Southern Livestock Rates

Petitions of railroads and others seeking reopening, reconsideration, and further hearing in the I. & S. No. 4779 proceeding involving rates on livestock to and from the South have been denied by the Interstate Commerce Commission, except the petition of Southrn railroads "in so far as it requests reopening so that arbitraries over and above the rates prescribed may be accorded short and weak lines within Southern territory." That phase of the case only is reopened for further hearing.

This proceeding, together with various related cases, was the subject of a report, reviewed in the *Railway Age* of September 5, page 381, wherein the commission has prescribed a new rate structure and transit arrangements on livestock to and from the South. Generally speaking, the commission fixed rates lower than the present bases, conceding among other factors a validity to the South's bid for more livestock business so that it may utilize for pasturage "millions of acres formerly used to produce cotton and tobacco, the demand for which has diminished."

R. E. A. Contracts with Star-Route Mail Carriers

Railway Express Agency arrangements with star-route mail carriers for the transportation of express do not suffice to make R. E. A. a common carrier by motor vehicle under Part II of the Interstate Commerce Act, according to an Interstate Commerce Commission report disposing of three applications for certificates covering highway operations in substitution for discontinued train services. Meanwhile, however, the report held that R. E. A. had made the required showings of public convenience and necessity, and the proceedings were held open for 90 days to permit the applicant to submit arrangements, other than the proposed contracts with the star route operators.

The report by Division 5 came after further hearing in No. MC-66562 (Sub-No. 190), and it embraced also Sub-Nos. 356 and 359. The routes involved are between Bloomington, Ill., and Minonk; Decatur and Pana; Mattoon and Delavan; Springfield and Waggoner; and Springfield and Palmyra. The commission's objection to the contracts with the star-route contractors was based on a finding that such arrangements would not conform to the rule of *Dixie Ohio Exp. Co. Common Carrier Application*, 17 M. C. C. 735, which provides that where a carrier employs vehicles of owner-operators, such vehicles must be operated under the carrier's direction and control and under its responsibility to the general public as well as to shippers.

I.C.C. Asks Roads if They Are Heeding Advice to Cut Debts

Railroads are being asked by the Interstate Commerce Commission, Division 4, to report on the extent to which they have followed during 1942 that suggestion in the commission's annual report for 1941 which called for the application of favorable current earnings to the reduction of debt. This was revealed in a December 3 notice issued by I. C. C. Secretary W. P. Bartel.

The notice quoted the pertinent annual-report passage as follows:

> Moreover, so far as most of the railroads which are not in bankruptcy are concerned, it seems clear that it would be a mistake, in the present tide of apparently revived earning power, to ignore the fact that they have a very heavy burden of debt and that it may be a crippling burden in the future, if earnings should radically decline. We have noted with approval that many of the managements are avoiding this mistake and are using the favorable earnings of the present, in one way or another, to reduce fixed charges as rapidly as practicable. While stockholders may on first thought be disposed to object to such a policy, it is the stockholders who will suffer most in the event of future insolvency. They will, we believe, be shortsighted if, by insistence on immediate dividends, they jeopardize the continuance and possible expansion of a program of debt reduction. It is clearly the sane and sound policy to pursue.

Mr. Bartel said that the results of the inquiry are expected to be announced "as soon as is practicable."

Train Help Wants 30% Pay Boost

A 30 per cent increase in all basic rates of pay of members of the Big Five operating brotherhoods will be demanded of the railroads within the next 10 days. Decision to ask for the increase with a minimum money increase of $3 per day was made at a meeting of general chairmen at Chicago on December 8 and 9. The proposal will be submitted to members for approval, after which the demands will be made on each railroad.

The demand which will be made is the same as that asked last year, with the exception that the minimum increase has been raised from $1.80 to $3. Increased wages, it is contended, are necessitated by added responsibilities and hazards placed upon employees, excessive hours, manpower shortage, higher living costs and the inequality of railroad pay compared with that in other industries.

The action of the Big Five unions follows a similar movement several weeks ago by the 15 non-operating unions which resulted in demands for an increase of 20 cents an hour, with a minimum of 70 cents and hour, and a closed shop.

Conferences between the railroads and the non-operating unions, on the demand of the latter for a wage increase and the closed shop, are scheduled to begin at New York on December 15.

The minimum increase of $3 a day demanded by the operating unions, would in-

crease the pay of the 350,000 employees involved about $383,250,000 a year. Since the last increase granted operating and non-operating employees, the payroll of Class I railroads has increased 31 per cent in eight months. During this period, the first eight months of 1942, there has been a 13 per cent increase in employment and an increase in the number of hours worked, however, the average compensation per hour based on "total time paid for" of employees of Class I steam railways, excluding executives, officials, and staff assistants, increased from 73.43 cents in the first nine months of 1941 to 83.51 cents in the same period of 1942 or 13.7 per cent. This increase, according to the Interstate Commerce Commission's Bureau of Transport Economies and Statistics, is primarily the result of the wage adjustments of December.

Dickerson Collision Engineer Gets Jail Sentence

Following a one-day trial, a jury in the Montgomery County (Md.) circuit court returned a verdict of guilty against Rufus McClelland, engineer of Baltimore & Ohio passenger train No. 20 which, on September 24, struck train No. 18 in the rear, throwing two derailed Pullman cars against a passing freight on the adjacent track, resulting in the death of 14 persons. As reported in *Railway Age* of November 14, page 795, the engineer was found by the Interstate Commerce Commission to have disregarded signals set against his train. He was indicted for manslaughter on 13 counts, one for each identified person killed, but actually stood trial on one count only.

On December 4 the judge pronounced a sentence of two and one-half years in the state house of correction, and at the same time overruled a motion for a new trial. Veteran union leaders who were acquainted with the circumstances were unable to recall any other comparable case in which an engineer received a jail sentence. No plans for an appeal have been made public as yet.

Club Meetings

The Central Railway Club of Buffalo held a meeting in the ball room of the Hotel Statler, Buffalo, N. Y., at 8 p. m. on December 10. Caleb R. Megee, manager, open car section, Car Service Division of the A. A. R., Washington, D. C., presented a paper entitled "Railroads' Participation in the War." Officers for the 1943 season were elected. It was announced that due to transportation conditions the fifty-fourth annual dinner of the club will be cancelled. An "installation of officers dinner-dance" will, however, be held on January 14.

The Railway Club of Pittsburgh will hold its next annual meeting at the Fort Pitt Hotel, Pittsburgh, Pa., at 8 p. m., on December 17. Charles H. Jennings, research engineer of Westinghouse Electric & Manufacturing Co., will address the meeting on the subject of "Arc Welding Developments," to be supplemented by lantern slides.

The Northwest Locomotive Association will hold its next meeting at 8 p. m., on December 21, at Woodruff Hall, St. Paul, Minn. Franklin T. Litz, general boiler foreman of the Chicago, Milwaukee, St. Paul & Pacific, Minneapolis, Minn., will address the meeting on the subject of "Locomotive Boilers."

D. & H. Adjustment Board Case Judgments Vacated

The United States Supreme Court on December 7 remanded to the district court the case brought before it from the lower courts to determine the disposition of disputes submitted to the National Railroad Adjustment Board but later withdrawn by the labor unions because they had become aware of the probability that the decision would go against them. The circumstances of the controversy and the decision of the Circuit Court of Appeals were outlined in *Railway Age* of June 27, page 1254.

As noted there, Royal A. Stone was chosen as referee to break a deadlock in the Adjustment Board panel, and he was about to announce his decisions when the unions withdrew their complaints. Thereupon the Delaware & Hudson, the railroad involved, filed suit to compel the board and the referee to complete the proceedings and announce their decision. The federal district court's ruling that it lacked jurisdiction was reversed by the higher court, and the case was before the Supreme Court for its decision on this question. Meanwhile the referee died. For that reason the Supreme Court now has vacated the judgments and remanded the case to the district court for further proceedings, without considering the merits of the claims involved.

A.R.E.A. Cancels Annual Meeting

The A. R. E. A. has cancelled plans for its annual meeting, scheduled to be held at Chicago on March 16-18. This action was taken at a meeting of the Board of Direction in Chicago on December 9, and was prompted by a desire to cooperate with the Office of Defense Transportation and the Association of American Railroads in reducing travel of railway officers to the minimum. The reports of committees, practically all of which have now been completed, will be issued to the members as heretofore, written discussion will be invited and the reports and discussions will be reviewed by the Board of Direction at a meeting to be held next March, following which recommendation for revisions of or additions to the Manual will be submitted to letter ballot. The reports, discussions and decisions on letter ballot will then be published in the Proceedings for distribution to the members as in past years. This action marks the first break in the continuity in the annual meetings of this association in the 42 years since its organization.

Freight Tax May Be Passed on in Some Cases

Exceptions to its recent determination, stipulating that freight rate payers generally must absorb the tax on amounts paid for the transportation of goods, have been made by the Office of Price Administration to permit the tax to be passed on to consumers by sellers of coal and iron and steel scrap. With respect to jobbers, dealers, and distributors handling iron and steel products for resale, the tax, for purposes of determining the applicable minimum price for any commodity or service, is to be treated as though it were a freight rate increase.

The transportation tax, which became effective December 1, is three per cent of the freight charge, except in the case of coal, where it is four cents per net ton. Defending the exception which permits the coal levy to be passed on, OPA stated that it had ruled thus because "the cost of transporting coal is a higher proportion of the total cost at destination than for most commodities (sometimes more than 50 per cent)." It added that "in view of the seasonal character of the solid fuels industry as well as the limited range of commodities handled, the absorption of the tax by the producer or the solid fuels dealer would result in inequities and hardships." The ruling applies to all grades of coal and other solid fuels; and it requires that the tax be stated separately in billings and passed on only with respect to coal on which it has actually been paid.

British Railways Prepared for Winter

The British railways, anticipating that they will be required this winter to handle a greater volume of traffic than at any time since the beginning of the war, have augmented their snow and ice-fighting equipment by the addition of 400 snow plow units, according to an announcement by the British Supply Council in North America. These plows will be attached to the head ends of large locomotives, and work cars have been provided to haul snow-fighting employees and equipment.

The electrified portions of the rail lines will be patroled by cars equipped with rail scrapers, wire brushes and sprayers of anti-freeze mixtures to keep conductor rails, signals, and switches in working orders, while at 1,400 locations in the London area alone electrical switch heaters have been installed ready to be turned on at the first sign of freezing.

S. E. Shippers Advisory Board Meets

At least five per cent more work will have to be got out of each unit of serviceable railroad equipment in 1943 if the nation's greatly increased transportation demands are to be met, M. J. Gormley, executive assistant of the Association of American Railroads, told the Southeast Shippers Advisory Board at its meeting in Birmingham, Ala., on December 10.

This will have to be done, Mr. Gormley declared, even if the railroads are allotted the materials to build the additional freight cars and locomotives they will require. "In 1942," he said, "the average freight car will have done about 965 ton-miles a day. Next year it must do more than 1,000 ton-miles a day."

This goal can be reached, Mr. Gormley maintained, if shippers will put more tons of freight in the cars and load them

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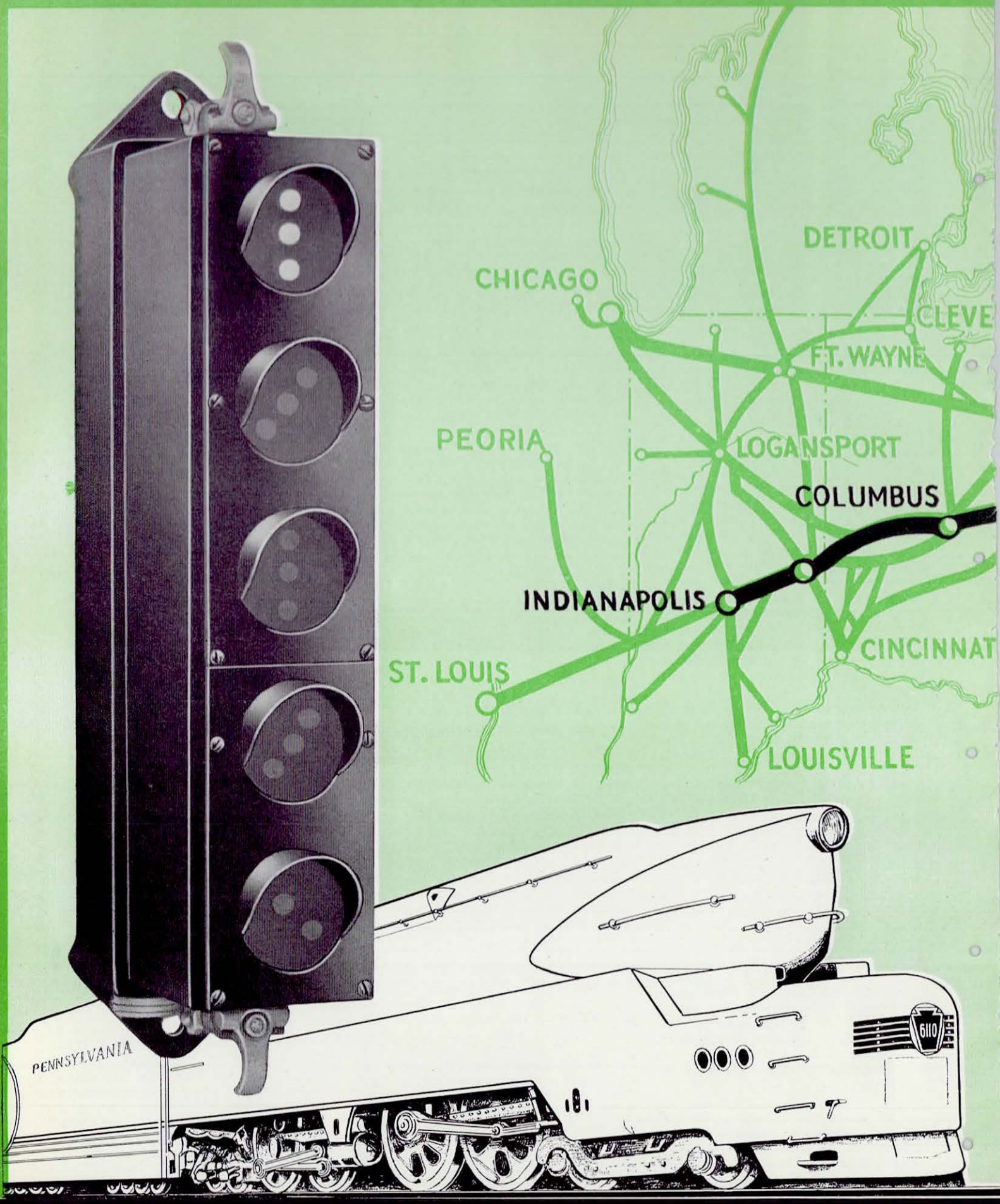

Union Switch & Signal Company

DISTRICT OFFICES . . . . . NEW YORK

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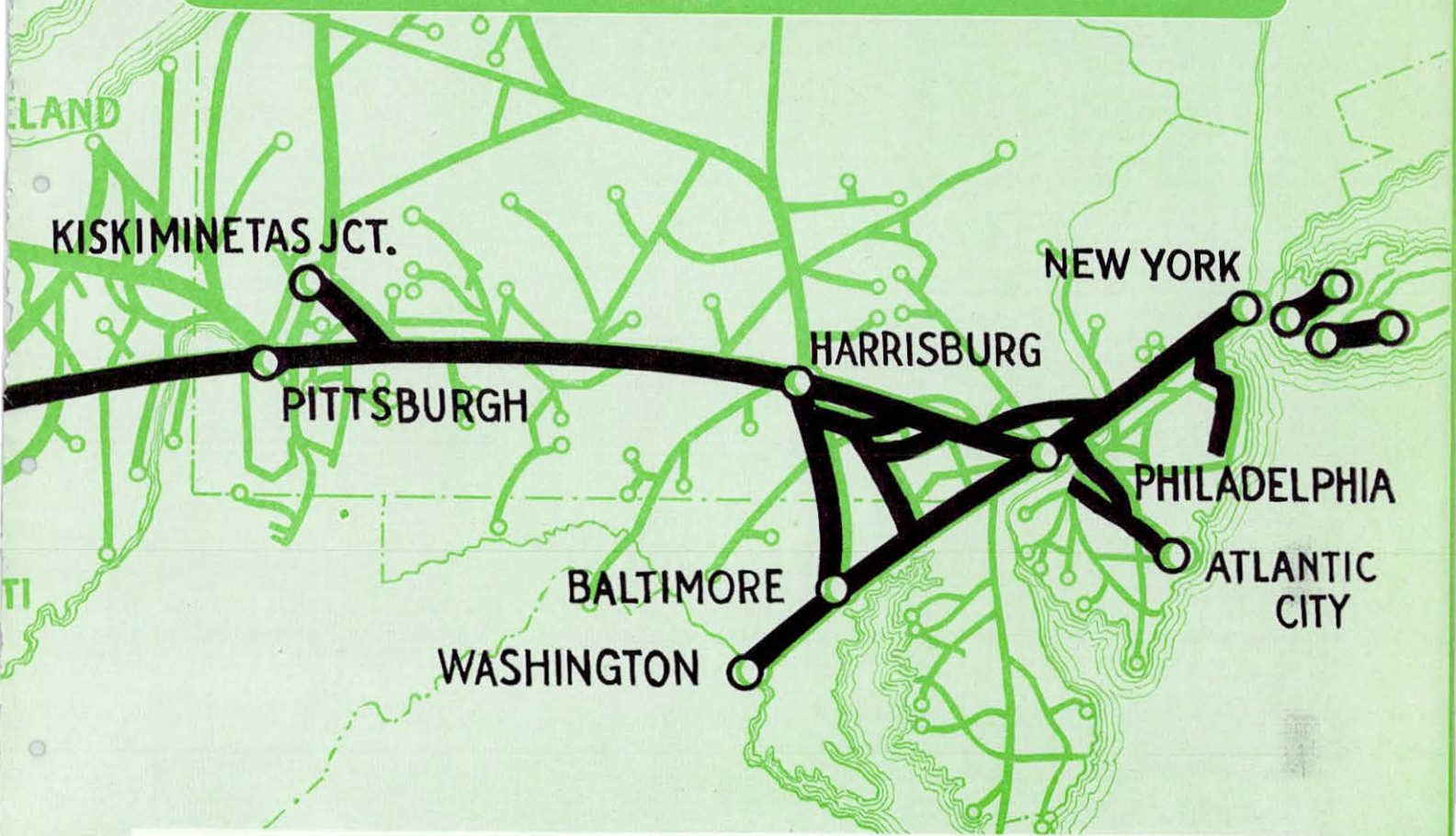


Across half of the continent, "Union" Cab Signals protect and facilitate the progress of every train that travels the main line routes shown in black on this map. Steamers in the west, electric locomotives in the east and the new and modern Class T1's are equipped with the signal that rides with the crew. Traffic conditions ahead are constantly indicated in the cab, and the engineman and fireman are advised without delay of every change that affects the safe operation of their train.

Years of experience have proved the great transportation value of cab signals on the Pennsylvania and our district office representatives will be glad to explain their advantages in detail.

2093

. . . . . SWISSVALE, PENNA.

CHICAGO . . ST. LOUIS . . SAN FRANCISCO

promptly; if railroads will speed up their movements of cars and cut down delays en route; and if receivers will unload cars more quickly after they have reached destination. He expressed confidence that this greater utilization of railroad equipment would be accomplished. "The railroads, the shippers and the receivers have proved in the past that there is no ceiling on achievement. They have demonstrated time and again that there is no nut so hard that the three of them, working together, can't crack it."

Mr. Gormley predicted that railroad freight traffic in 1943 will be approximately 12 per cent above record-breaking 1942, and that railroad passenger business will go up about 15 per cent. "If these forecasts are borne out," he added, "the railroads will be handling more than twice as much freight traffic and more than 2½ times as much passenger traffic as in 1939, and 75 per cent more freight business and 40 per cent more passenger traffic than in 1918, the peak year of the last war."

Pointing out that the railroads have received approval from the WPB for the acquisition of new equipment "at a monthly rate somewhat lower than the railroads proposed," Mr. Gormley went on to say that "further consideration of the railroads' construction and maintenance program will be given by the WPB after the first of the year. At that time, it is to be hoped that more materials and equipment will be allowed, especially the locomotives which the railroads need so badly."

In connection with the 85 per cent increase in freight traffic moving by all agencies of transportation, Mr. Gormley said that "the job is being done with approximately half a million fewer freight cars and about 22,000 fewer locomotives than the roads had in 1918, and only a few more freight cars and actually fewer locomotives than they had at the outbreak of war in 1939."

"In doing this job, the railroads have raised their operating efficiency to the highest point on record. Freight car utilization, as measured by the number of ton-miles handled per active car day, rose from 692 in 1939 to 966 in 1942—an increase of two-fifths. Freight locomotive utilization, as measured by the number of gross ton-miles handled per active locomotive day, went up from 167,870 in 1939 to 220,851 in 1942—an increase of nearly one-third."

George H. Shafer, of St. Paul, Minn., president of the National Association of Shippers Advisory Boards, expressed the opinion that "the shippers of this country should demand that the War Production Board release material for the construction of necessary rolling stock, and see that much needed supplies are furnished the railroads in sufficient amount to keep their plants in working order. A breakdown in our transportation system at this time would have far-reaching consequences. We cannot expect to pile an increased load upon the rail carriers each year and then deny them supplies and equipment."

Ray A. McCaffrey, general chairman of the Southeast Shippers Advisory Board, in his opening remarks, said that "the miracle of transportation performance during the past 12 months could not have been accomplished without shipper-carrier cooperation."

Ward Sues Carriers for West Coast Strike Losses

A civil suit, seeking $2,026,544 damages from three railroads and 15 trucking and express companies that allegedly failed to provide service during a strike in 1940-41, was filed in the U. S. District Court at Oakland, Cal., by Montgomery Ward & Co. on December 3. Named as joint defendants are the Western Pacific; the Atchison, Topeka & Santa Fe; the Southern Pacific; Railway Express Agency, Inc., and 15 trucking and local express services operating in the Oakland area.

The strike was called by A. F. of L. locals of teamsters, warehousemen and clerks in December, 1940, and lasted until July 26, 1941. The strike, the suit contends, was followed by a refusal of the Western Pacific to switch cars to Ward's tracks or to deliver shipments and the defendant roads' refusal to pick up shipments at its Oakland plant. Many shipments were also held up, it is alleged, "which were in their custody as common carriers." Similar charges are made against the trucking companies involved and it is pointed out that "the conduct of the defendants during the general stoppage of transportation services to the plaintiff was concurrent."

"All of the defendants," the suit points out, "were obligated by their published tariffs to perform transportation services as common carriers to and from Oakland, which services include the transport of property to and from, the making of store deliveries, and the pick-up of property at business establishments in the city, including the establishment of the plaintiff."

New York Central Sends Gifts to Employees in Armed Forces

The New York Central System is sending 11,200 Christmas gift packages to an equal number of its employees now serving in the armed forces, including those training at home and those fighting at the fronts from Africa to the Solomons. Early in November, 1,200 packages were sent to those employees who are serving abroad and now 10,000 more are being dispatched to Army and Marine camps and Navy and Coast Guard stations throughout the United States.

A card of Christmas greeting from F. E. Williamson, president, accompanies each package of Yuletide cheer. The card reads:

"There are more than eleven thousand of you, and you are scattered over the five continents and on the seven seas of the world. You are fighting for all of us in the cause of democratic decency against the forces of aggression, intolerance and brutality. No matter how hard and heavy may be the struggle before the job is done, we know that you will carry on in the noblest of American traditions until victory is ours.

"The enclosed package comes to you with the compliments of the New York Central System. You are constantly in our thoughts and prayers, and on behalf of your fellow New York Central workers, I extend cordial wishes for a Merry Christmas and a Happy New Year."

Each package contains a carton of 200 cigarettes, a pound of hard candy, a large bar of chocolate, packages of chewing gum, brushless shaving cream, talcum powder, razor blades, a tooth-brush, tooth powder, toilet soap, stationery and a New York Central pencil.

Equipment and Supplies

LOCOMOTIVES

THE WABASH has ordered, subject to approval by the War Production Board, two Diesel-electric switching locomotives of 1,000 hp. from the American Locomotive Company.

THE KANSAS CITY SOUTHERN has ordered four Diesel-electric switching locomotives of 1,000 hp. for road and switching service from the American Locomotive Company.

THE ANN ARBOR has ordered, subject to approval by the War Production Board, two Diesel-electric switching locomotives of 660 hp. from the Amerian Locomotive Company.

THE NORTHEAST OKLAHOMA has ordered one 80-ton Diesel-electric freight locomotive of 500 hp. for January, 1943, delivery from the General Electric Company. Authority to build this locomotive has been received from the War Production Board.

FREIGHT CARS

THE NORTHERN PACIFIC is inquiring for 250 gondola cars of 50 tons' capacity and 300 flat cars of 50 tons' capacity.

THE MISSOURI-KANSAS-TEXAS has ordered, subject to approval by the War Production Board, 17 30-ft. 7-in. steel-underframe caboose cars from the company's own shops.

THE ANN ARBOR has ordered, subject to approval by the War Production Board, 50 33-ft. 50-ton hopper cars of composite wood and steel construction from the Wabash railroad company shop.

SIGNALING

THE CHICAGO, ROCK ISLAND & PACIFIC has had the time extended by the Illinois Commerce Commission within which it is required to install automatic flashing light signals, bells and short arm gates at the crossings of the railroad with Main, Aurora, Pearl, Chicago and LaSalle streets, Marseilles, until materials can be secured but "in no event beyond January 1, 1945."

MOTOR VEHICLES

THE PENNSYLVANIA GREYHOUND LINES, which affords co-ordinate bus service with the Pennsylvania, has received delivery of 17 37-passenger intercity type motor buses from the a. c. f. Motors Company.

Abandonments

ATLANTIC COAST LINE.—This road has applied to the Interstate Commerce Commission for authority to abandon its branch from Eutawville, S. C., to Lennard, 3.3 miles.

BOSTON & MAINE.—Examiner Ralph H. Jewell has recommended that the Office of Defense Transportation certify to the War Production Board that the branch of this road from Bedford, Mass., to Concord, 3.85 miles, is essential to war transportation.

CENTRAL OF NEW JERSEY.—This road has applied to the Interstate Commerce Commission for authority to abandon its freight station facilities at Pier 80 at the foot of West Fortieth street, New York. While the applicant has been advised that the commission has no jurisdiction over the proposal, it was prompted to file the application because there has been no formal determination of the question.

CHESAPEAKE & OHIO.—This road has applied to the Interstate Commerce Commission for authority to abandon that section of its Pond Fork subdivision between Barrett, W. Va., and Kent, 4.1 miles.

CHESAPEAKE & OHIO.—This road has applied to the Interstate Commerce Commission for authority to abandon its 1.7-mile line extending from a point near Mount Hope, W. Va., to the end of track at a point beyond Price Hill.

CHICAGO, BURLINGTON & QUINCY.—Division 4 of the Interstate Commerce Commission has authorized this road to abandon a portion of a branch line from Alma, Neb., to Huntley, 9.77 miles.

CHICAGO GREAT WESTERN.—This road has applied to the Interstate Commerce Commission for authority to abandon 1.64 miles of track in Winona, Minn.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—In a proposed report in Finance Docket 13900 Examiner Paul C. Albus has recommended that the Interstate Commerce Commission authorize this road to abandon a branch from Otis, Wis., to Doering, 16.8 miles.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—This road has been authorized by the Interstate Commerce Commission, Division 4, to abandon its line from Eatonville, Wash., to a point near Elbe, approximately 14 miles. An alternate line is to be acquired and operated in its place.

CHICAGO & NORTH WESTERN.—Division 4 of the Interstate Commerce Commission has denied the application of this road for permission to abandon a branch from Eland, Wis., to Rosholt, 19.9 miles, on the ground that there is some public need for the line, while the evidence "is not convincing" that continued operation will impose an undue burden on the applicant.

CHICAGO & NORTH WESTERN.—The Interstate Commerce Commission, Division 4, has denied the application of this road for authority to abandon its branch from Hunting, Wis., to Big Falls, 5.46 miles, on the ground that traffic which the applicant says it has lost to competitive transportation facilities and through light farm production is returning to the rails.

FLORIDA EAST COAST.—This road has been authorized by Division 4 of the Interstate Commerce Commission to abandon its branch from San Mateo Junction, Fla., to San Mateo, 2.8 miles.

LOUISIANA & ARKANSAS.—The Interstate Commerce Commission, Division 4, has authorized this road to abandon that part of a branch line between St. Francisville, La., and Paloma, 7.82 miles.

LOUISIANA & ARKANSAS.—This road has applied to the Interstate Commerce Commission for authority to abandon its 12.1-mile line extending from Paloma, La., southerly to a point "approximately 2,000 ft. north of its switch at Maryland Tank Farm." The application also seeks authority to dismantle "or otherwise dispose of" the line, pointing out in the latter connection that arrangements can be made with the South Shore Railway Company to take over the line at its full scrap value.

LOUISVILLE & NASHVILLE.—This road has applied to the Interstate Commerce Commission for authority to abandon its line from Shelbyville, Ky., to Bloomfield, 27 miles.

LOUISVILLE & NASHVILLE.—This road has been authorized by Division 4 of the Interstate Commerce Commission to abandon segments of its line near Danville, Tenn., to make way for a Tennessee Valley Authority project. The segments involved are (a) from a point near McKinnon, Tenn., to a point near Danville, 3.3 miles; (b) from a point near Danville, Tenn., to a point near Faxon, 4 miles; and (c) from Big Sandy, Tenn., to Porters, 10.5 miles. Lines constructed on new locations will be constructed to replace these segments.

MISSOURI PACIFIC.—Division 4 of the Interstate Commerce Commission has authorized this road's subsidiary, the Sugar Land, to abandon a line from Cabell, Tex., to Hickey, 11.66 miles.

NEW YORK CENTRAL.—The Interstate Commerce Commission, Division 4, has authorized this road and the Michigan Central to abandon operation of, and the St. Joseph, South Bend & Southern to abandon, the line from South Bend, Ind., to a point near Baroda, Mich., 25.04 miles.

NEW YORK CENTRAL.—This road and the Chicago, Kalamazoo & Saginaw have been authorized by Division 4 of the Interstate Commerce Commission to abandon operation of and to abandon, respectively, a branch line from Richland Junction, Mich., to Delton, 8.29 miles.

NEW YORK CENTRAL.—Division 4 of the Interstate Commerce Commission has authorized this road and the Cleveland, Cincinnati, Chicago & St. Louis to abandon operation of and to abandon, respectively that part of a branch from a point 0.5 mile west of Trafalgar, Ind., to Martinsville, 18.4 miles, reserving jurisdiction over protection of employees that may be affected.

NORTHERN PACIFIC.—This road has been authorized by Division 4 of the Interstate Commerce Commission to abandon part of a branch line extending from Keystone Junction, N. D., to Berndt, 3.96 miles.

PARIS & MT. PLEASANT.—Examiner Ralph H. Jewell has recommended that the Office of Defense Transportation certify to the War Production Board that this road's entire line from Paris, Tex., to Mt. Pleasant, 51.43 miles, is essential to war transportation, particularly as it handles 600 to 900 carloads of petroleum monthly destined to eastern seaboard points.

YAKIMA VALLEY.—This road has applied to the Interstate Commerce Commission for authority to abandon its line between Yakima, Wash., and Speyers, 4.2 miles.

Supply Trade

Alvin A. Borgading, assistant to the purchasing agent of the **American Car & Foundry Co.** since 1939, has been appointed purchasing agent for that company. Mr. Borgading has been associated with a. c. f. since 1907, when as a boy he began work in the St. Louis, Mo., office immediately after his graduation from St. Louis schools. In 1918 he was transferred to the New York office as buyer for the purchasing department and in 1923 he was appointed chief clerk of the purchasing department. **Herbert Streader** has been appointed assistant purchasing agent in charge of the material control division set up under the War Production Board's controlled materials plan.

OBITUARY

Elmer H. Fathauer, sales agent of the National Malleable & Steel Castings Co., in St. Louis, Mo., died in Decatur, Ill., on November 19. He was 47 years of age.

Construction

PITTSBURGH & WEST VIRGINIA.—This railroad has awarded a contract to the Patterson Construction Company of Monongahela, Pa., for grading work, at estimated cost of $15,770, in connection with the construction of a wye track at its Monessen, Pa., yard, the total cost of which is estimated at $25,800.

U. S. ENGINEER OFFICE, DENISON, TEXAS.—A contract for the construction of railroad facilities for the Air Force station in Smith County, Texas, to cost $100,000, has been awarded to McGinnis and Grafe, Waco, Texas.

News Department continued on second left-hand page

"GIT THAR FUSTEST

THIS terse declaration by Nathan Bedford Forrest, an outstanding general in the Civil War, is more true today than ever before.

It means, simply, that if we are to win this global war we must keep ahead of the enemy . . . beat him to the punch . . . by producing more . . . by delivering to our fighting forces more and more materials, equipment and supplies . . . and with the least possible delay. Time waits for no man. Every hour lost is a tribute to the enemy.

ELECTRO-MOT

GENERAL MOTORS CORPORATION

WITH THE MOSTEST"

It means, also, that from the time raw materials leave the ground until the finished products reach their destinations, maximum production must be maintained. Every available machine tool . . . every piece of rolling stock, especially locomotives, must be used to the very limit of its capabilities. A nation's production and fighting fronts are only as good as its transportation front. American railroads, with their millions of fighters on the home front, are meeting this challenge as never before because—

TRANSPORTATION IS VITAL TO VICTORY

IVE DIVISION

LA GRANGE, ILLINOIS, U. S. A.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Purchase of Subsidiary.*—Division 4 of the Interstate Commerce Commission has authorized this road to purchase for cash at cost the property of the Rocky Mountain & Santa Fe, its wholly owned subsidiary, now operated under lease. The corporate identity of the Rocky Mountain & Santa Fe is to be maintained.

ATCHISON, TOPEKA & SANTA FE.—*Merger of Subsidiaries.*—Division 4 of the Interstate Commerce Commission has authorized this company to acquire by merger the property of 11 subsidiary companies, or any of them, and to liquidate the subsidiary corporations to simplify the applicant's corporate structure. The companies to be merged are the Barton County & Santa Fe, California Southern, Corona & Santa Fe, Eldorado & Santa Fe, Elkhart & Santa Fe, Grand Canyon, Minkler Southern, Oklahoma Central, Salina & Santa Fe, Santa Fe & Los Angeles Harbor, and Verde Valley. Except for directors' qualifying shares and 20 shares of the stock of the Grand Canyon the applicant owns all of the stock of the companies to be liquidated, as well as all of their bonded and open-account indebtedness, and operates their property under lease.

ATLANTIC COAST LINE.—*Acquisition.*—This road has applied to the Interstate Commerce Commission for authority to acquire the properties, rights, and franchises of the Belt Line Railway Company (Montgomery, Ala.). A. C. L. owns all of Belt's stock and $245,000 of its mortgage bonds, which latter will be surrendered for cancellation as the consideration for the properties. The transaction would be subject to the Gulf, Mobile & Ohio's trackage rights under contracts which expire June 13, 1947.

CANADIAN NATIONAL.—*Purchase of Atlantic & St. Lawrence.*—This road has applied to the Interstate Commerce Commission for authority to acquire control of the Atlantic & St. Lawrence, now operated under lease, by purchase of substantially all of its capital stock. A hearing on the application is scheduled for December 15 in Washington, D. C.

CENTRAL OF GEORGIA.—*Decision on Interest Payments Reserved.*—The United States district court at Savannah, Ga., on December 2 reserved decision on a petition of mortgage holders for payment of more than $3,000,000 in overdue interest on bonds of the Central of Georgia. Trustee for the railroad recommended a partial payment of $1,150,000 on the accumulated interest and asked authorization of a $15,000,000 rehabilitation program to cover a period of five years. The court named an advisory committee composed of representatives of the first mortgage bonds, the consolidated bonds, the refunding and general mortgage bonds, the divisional bonds and the Reconstruction Finance Corporation to consult with the trustee on the rehabilitation program and on reorganization plans. (Previous item in *Railway Age* of October 31, page 714.)

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Acquisition and Operation.*—Division 4 of the Interstate Commerce Commission has authorized this road to acquire without cost to it and to operate a line to be constructed by the city of Tacoma, Wash., from a point near Eatonville, Wash., to Elbe, 12.66 miles, which will replace a line to be abandoned in connection with a waterpower development.

ERIE.—*Bond Conversion.*—Division 4 of the Interstate Commerce Commission has authorized this road to convert $443,000 of its general mortgage 4½ per cent income bonds, series A, into not more than 4,430 shares of its 5 per cent preferred stock, series B.

LOUISVILLE & NASHVILLE.—*Acquisition and Operation.*—Division 4 of the Interstate Commerce Commission has authorized this road to acquire without cost to it, except for certain materials, and to operate a line to be constructed near Danville, Tenn., by the Tennessee Valley Authority to replace on a new location its existing line in that area which will be flooded upon completion of a dam.

NEW YORK, NEW HAVEN & HARTFORD.—*Reorganization.* — Petitions for further hearings on the order of October 6 providing a plan for the reorganization of this road and certain subsidiaries, and for modification of the terms of the plan, described in *Railway Age* of October 17, page 626, have been filed with the Interstate Commerce Commission by protective committees for various bond issues, for the preferred and common stockholders of the company, and for the city of Boston and Commonwealth of Massachusetts.

ST. LOUIS-SAN FRANCISCO.—*Reorganization Expenses.*—Division 4 of the Interstate Commerce Commission has authorized this company to reimburse E. N. Brown, chairman of the board of directors, in an amount not to exceed $10,000 for expenses incurred since December 1, 1937, in connection with proceedings for reorganization, but has deferred fixing a final maximum amount to be paid in this connection.

Average Prices of Stocks and Bonds

	Dec. 8	Last week	Last year
Average price of 20 representative railway stocks..	27.61	28.25	25.72
Average price of 20 representative railway bonds..	62.75	67.03	60.01

Dividends Declared

Boston & Albany.—$2.25, payable December 31 to holders of record November 30.

Chicago Great Western.—5 Per Cent Preferred, 62½¢, cumulative, payable December 28 to holders of record December 15.

Elmira & Williamsport.—7 Per Cent Preferred, $1.60, semi-annually, payable January 2 to holders of record December 20.

Mobile & Birmingham.—4 Per Cent Preferred, $2.00, semi-annually, payable January 2 to holders of record December 1.

New York & Harlem.—10 Per Cent Preferred, $2.50, semi-annually; Common, $2.50, semi-annually, both payable January 2 to holders of record December 15.

Pittsburgh, Ft. Wayne & Chicago.—$1.75, quarterly; 7 Per Cent Preferred, $1.75, quarterly, both payable January 5 to holders of record December 10.

Railway Officers

TRAFFIC

A. L. Shine has been appointed general agent of the St. Louis-San Francisco at San Antonio, Texas, to succeed **W. B. Simpson,** who has joined the armed forces.

J. E. Irwin, traveling freight and passenger agent of the Chicago, Milwaukee, St. Paul & Pacific, has been appointed acting general agent, with headquarters in Philadelphia, to succeed **W. A. Stauffer,** who has been granted a leave of absence for military service.

To deal with the complex problems involved in handling the increasing volume of air express, the Air Express division of the Railway Express Agency has announced the creation of the post of air express manager in each of its four operation divisions throughout the country. The new appointees are **Ralph W. Starkey,** for the Eastern departments; **P. H. Cummings,** Central departments; **M. G. Lichteig,** Western departments, and **V. M. Grimsley,** for the Southern departments, with headquarters at New York, Chicago, San Francisco, Cal., and Atlanta, Ga., respectively.

Sherman K. Burke, assistant vice-president, system freight traffic, of the Southern Pacific, with headquarters at San Francisco, Cal., has been promoted to general traffic manager, with headquarters at Chicago, to succeed **W. W. Hale,** who has been promoted to vice-president in charge of system freight traffic, as reported in the *Railway Age* of November 28. **D. J. McGanney,** freight traffic manager, Central district, succeeds Mr. Burke; **F. C. Nelson,** assistant to the freight traffic manager in charge of rates and divisions,

Sherman K. Burke

succeeds Mr. McGanney; and **L. A. Brockwell,** assistant general freight agent, Central district, succeeds Mr. Nelson.

Mr. Burke was born in San Francisco on May 8, 1894, and graduated from the University of California in 1917. During World War I he served with the Army, where he was commissioned a captain. He

entered railway service in 1924 with the Southern Pacific and since has held the positions of freight agent; chief clerk, industrial department; assistant general industrial agent; assistant to the general freight traffic manager; assistant general freight agent; and assistant to the vice-president, system freight traffic.

Mr. McGanney entered railway service

D. J. McGanney

in 1911 as an office boy in the auditor's office of the Southern Pacific at San Francisco and during the period to 1928 was file clerk, rate clerk, head clerk, chief clerk of the manifest bureau and statistician in the freight traffic department. In the latter year he was promoted to assistant to the freight traffic manager, and in the following year was made assistant to the vice-president in charge of freight traffic for the system. He held this position until July, 1934, when he was made general freight agent and in 1940 had his jurisdiction extended over the Northwestern Pacific. In June, 1942, he was promoted to freight traffic manager.

L. T. Wilcox, general freight traffic manager of the Union Pacific at Omaha, Neb., who was granted a leave of absence because of illness, as reported in the *Railway Age* of September 12, has resumed his duties and **A. J. Seitz,** who has been acting general freight traffic manager, has resumed his position of freight traffic manager.

OPERATING

Margarito Ramirez, acting general manager of the National Railways of Mexico, has been made general manager to succeed general Enrique Estrada who died on November 3, as reported in the *Railway Age* of November 7.

W. C. Hannenberg, assistant auditor of investment and special accounts, of the Chicago, Milwaukee, St. Paul & Pacific, has been appointed auditor of investment and joint facility accounts, succeeding **J. P. Kiley,** whose promotion to assistant to the general manager was announced in the *Railway Age* of December 5.

W. T. Cummins, assistant superintendent of the Evansville division, of the Louisville & Nashville, has been transferred to Middlesboro, Ky., succeeding **N. H. Lockney,** whose promotion was announced in the *Railway Age* of December 5. Mr. Cummins is succeeded by **T. A. McDonald.**

E. R. Berg, trainmaster of the Baltimore & Ohio at Punxsutawney, Pa., has been transferred to Pittsburgh, Pa., succeeding **J. D. Warfield,** whose promotion was announced in the *Railway Age* of October 3. **J. R. Frease,** assistant trainmaster at Foxburg, Pa., has been promoted to trainmaster, succeeding Mr. Berg, and **R. O. Burris** has been appointed to succeed Mr. Frease at Foxburg.

J. K. Vance, freight claim agent of the New York Central, Big Four district, with headquarters at Indianapolis, Ind., has retired after 53 years' service. He entered the employ of the N. Y. C. on December 1, 1889, as a telegraph operator at Harper, Ohio, and after serving as agent at various points was promoted to assistant freight loss and damage agent in July, 1916. In January, 1918, he was promoted to freight loss and damage agent and in August, 1918, he was promoted to freight claim agent at Indianapolis.

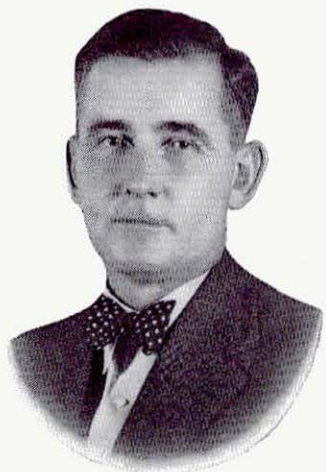
R. L. Sahm has been appointed trainmaster of the River division of the New York Central, with headquarters at Weehawken, N. J.; **W. T. Armstrong** has been appointed assistant trainmaster of the Syracuse division, at Syracuse, N. Y.; **B. Daniels** and **J. H. Barry** have been appointed trainmasters of the Rochester division, with headquarters at Rochester, N. Y.; **J. F. Nash** has been appointed trainmaster, and **W. J. Barnes,** assistant trainmaster, of the Buffalo division, with headquarters at Buffalo, N. Y.; **H. J. Palmer** has been appointed assistant trainmaster of the Electric, Harlem and Putnam divisions at New York, and **W. A. Shea** has been appointed assistant trainmaster of the Hudson and Mohawk divisions, with headquarters at Albany, N. Y.

ENGINEERING & SIGNALING

A. V. Johnston has been appointed division engineer of the Hornepayne division of the Canadian National, with headquarters at Hornepayne, Ont., succeeding **F. C. Mattocks,** transferred to the Allandale division, with headquarters at Allandale, Ont. Mr. Mattocks succeeds **D. E. Carriere,** who, in turn, has been transferred to the St. Thomas division, with headquarters at St. Thomas, Ont., succeeding **S. B. Wass,** transferred to Toronto, Ont., with jurisdiction over the Toronto terminals. Mr. Wass succeeds **L. I. Stone,** who has been promoted to assistant district engineer, Northern Ontario district, with headquarters at North Bay, Ont.

John Robert Caswell, assistant district engineer of the Canadian Pacific at Toronto, Ont., was recently promoted to district engineer, with headquarters at North Bay, Ont., succeeding **Samuel Bruce McConnell,** who resigned on pension after more than 44 years of service with the Canadian Pacific. Mr. Caswell was born on May 13, 1891, and entered railroad service with the Canadian Pacific in April, 1910, as a chainman in the engineering department at Toronto, Ont. Later that year he transferred to the construction department of the Georgian Bay & Seaboard (Canadian Pacific), and subsequently served as watchman, rodman and instrumentman, becoming transitman in the engineering department at London, Ont., in April, 1914. He was appointed reserve engineer at London, in 1918, and in April, 1920, became division engineer, with headquarters at Sudbury, Ont., transferring to Smith's Falls, Ont., in July, 1924. He was appointed acting assistant district engineer, operating department, at Toronto, in August, 1939, and assistant district engineer in April, 1940, in which position he was serving at the time of his recent appointment.

Mr. McConnell was born on May 22, 1880, and entered railway service with the Canadian Pacific in the summer of 1898 as a chainman, land survey department, with headquarters at Vaudreuil, Que., and Pointe Fortune. In the spring of 1899, he became transitman of the Lachine Canal branch, and in 1902 was appointed assistant engi-



John Robert Caswell

neer, engineering department, of the Lake Superior division. In September, 1905, he went to Montreal, Que., and in 1910 became assistant division engineer, engineering department, at Montreal. He was appointed division engineer at Lake Superior and North Bay in July, 1913, and in 1917 was transferred to the Algoma district. In 1919, Mr. McConnell was appointed district engineer of the Algoma district and remained in that position until his recent retirement.

MECHANICAL

A. H. Rieger, road foreman of engines of the Quebec district of the Canadian National, has been transferred to the Montreal district, with headquarters at Joliette, Que.

OBITUARY

B. F. Allen, former treasurer for the Receivers of the Seaboard Air Line who was recently appointed assistant to the chief finance officer, died on December 4, at Portsmouth, Va. He was 52 years old.

Table of Revenues and Expenses begins on next left-hand page

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1942

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1942	1941
Akron, Canton & Youngstown	Oct.	171	$311,154	$108	$326,619	$61,099	$28,357	$15,427	$87,532	$206,128	63.1	$120,491	$80,856	$68,383	$43,510
	10 mos.	171	2,712,524	838	2,833,319	531,588	294,952	152,198	807,289	1,903,532	67.2	929,787	651,841	509,677	587,316
Alton	Oct.	959	2,258,061	607,900	3,161,804	295,243	389,360	50,767	903,477	1,749,193	55.3	1,412,611	811,549	624,586	234,882
	10 mos.	959	18,463,505	4,303,307	25,323,765	2,620,647	3,412,876	500,495	8,688,331	16,199,560	64.0	9,124,205	5,768,021	3,869,828	1,678,172
Atchison, Topeka & Santa Fe System	Oct.	13,169	28,754,992	6,664,497	37,793,488	3,433,122	4,949,194	540,111	8,835,840	18,234,090	48.2	19,559,398	11,565,642	11,315,723	3,567,222
	10 mos.	13,327	232,610,226	40,584,022	291,408,561	29,893,492	44,499,537	4,860,977	78,570,607	162,266,287	55.7	129,142,274	66,802,317	64,522,435	33,445,509
Atlanta & West Point	Oct.	93	235,838	121,067	393,934	49,270	33,635	9,044	110,979	217,867	55.3	176,067	124,016	105,913	40,971
	10 mos.	93	2,059,397	821,193	3,190,282	303,881	349,950	92,888	1,004,569	1,891,494	59.3	1,298,788	729,717	546,940	199,130
Western of Alabama	Oct.	133	278,609	121,694	430,719	38,472	40,032	8,988	113,115	214,400	50.0	216,319	154,513	150,957	55,347
	10 mos.	133	2,364,490	841,811	3,508,641	311,426	428,741	90,162	1,034,182	1,993,901	55.8	1,514,740	818,327	761,145	262,297
Atlanta, Birmingham & Coast	Oct.	639	543,750	38,043	605,536	80,165	84,438	27,318	212,328	423,760	70.0	181,776	122,702	93,836	43,572
	10 mos.	639	4,273,570	342,774	4,864,879	603,270	659,471	263,900	1,873,888	3,579,188	73.6	1,285,691	728,019	409,658	236,422
Atlantic Coast Line	Oct.	4,993	7,382,214	2,508,747	10,650,753	780,087	1,485,179	158,175	2,798,642	5,522,931	51.9	5,127,822	2,127,822	1,923,850	486,845
	10 mos.	5,007	65,142,146	19,882,391	90,567,757	6,477,966	13,816,120	1,738,681	26,615,356	51,554,488	56.9	39,013,269	19,458,269	17,015,217	9,676,994
Charleston & Western Carolina	Oct.	343	316,510	17,585	341,439	29,860	49,447	9,720	95,880	191,278	56.0	150,161	80,161	84,131	43,651
	10 mos.	343	3,078,104	108,831	3,252,126	330,757	458,966	99,758	979,903	1,931,826	59.4	1,320,300	745,300	730,976	685,185
Baltimore & Ohio	Oct.	6,248	25,370,991	2,710,086	29,519,787	3,101,850	5,223,400	455,024	8,659,907	18,338,725	62.1	11,181,062	7,221,389	6,444,941	3,542,436
	10 mos.	6,256	218,263,016	21,260,878	251,481,658	22,894,047	52,076,528	4,568,732	80,324,299	168,174,385	66.9	83,307,273	54,915,203	48,834,937	41,501,742
Staten Island Rapid Transit	Oct.	24	183,169	91,944	287,994	19,005	25,352	914	90,764	152,873	53.1	135,121	109,838	95,259	—15,111
	10 mos.	24	1,206,962	860,258	2,163,899	178,649	256,871	11,843	901,093	1,496,274	69.1	667,625	393,195	289,392	—131,574
Bangor & Aroostook	Oct.	603	469,352	59,196	573,937	101,077	99,672	5,537	143,501	377,406	65.8	196,531	104,617	133,917	133,641
	10 mos.	603	4,623,969	487,286	5,379,953	993,881	951,960	60,159	1,464,183	3,739,638	69.5	1,640,315	871,021	1,088,458	1,100,850
Bessemer & Lake Erie	Oct.	214	2,110,186	1,170	2,128,230	195,461	623,583	11,020	331,162	1,198,596	56.3	929,634	520,091	633,165	436,504
	10 mos.	214	18,405,381	9,127	18,555,430	1,616,634	5,683,946	131,953	3,053,754	10,869,969	58.6	7,685,461	2,456,785	3,323,881	6,733,351
Boston & Maine	Oct.	1,856	5,087,098	1,738,775	7,458,071	908,165	1,013,627	76,176	2,229,507	4,438,932	59.5	3,019,139	1,866,032	1,625,964	643,799
	10 mos.	1,863	46,403,339	12,273,179	64,341,813	7,805,478	9,223,048	713,504	21,267,528	40,966,428	63.7	23,375,405	14,679,459	11,823,018	8,556,215
Burlington, Rock Island	Oct.	228	106,844	52,872	173,216	21,565	20,150	2,705	71,282	130,108	75.1	43,138	31,655	14,131	8,260
	10 mos.	237	996,113	376,317	1,471,614	199,104	197,977	25,080	597,485	1,138,689	77.4	332,925	231,915	123,934	—23,455
Cambria & Indiana	Oct.	37	178,569	.....	178,671	11,650	59,272	463	21,458	99,781	55.85	78,880	—34,019	43,814	95,638
	10 mos.	37	1,764,300	.....	1,765,088	105,327	599,031	4,815	186,111	960,169	54.40	804,849	—84,963	656,039	751,373
Canadian Pacific Lines in Maine	Oct.	234	433,138	53,796	508,709	50,339	57,286	6,327	144,019	265,343	52.2	243,366	216,948	191,115	—6,223
	10 mos.	234	3,485,383	566,907	4,246,095	546,376	545,684	67,006	1,262,030	2,490,541	58.7	1,755,474	1,578,879	1,331,506	544,618
Canadian Pacific Lines in Vermont	Oct.	90	90,061	15,196	120,697	31,830	27,401	2,294	81,789	147,047	121.9	—26,410	—36,203	—61,957	—48,840
	10 mos.	90	940,977	123,937	1,192,115	269,410	249,074	24,142	803,051	1,381,068	115.8	—188,942	—270,260	—522,061	—364,913
Central of Georgia	Oct.	1,815	2,365,849	541,764	3,095,313	252,157	427,854	63,871	849,504	1,692,402	54.7	1,402,936	1,078,282	1,033,367	558,773
	10 mos.	1,815	18,198,467	3,628,133	23,554,838	2,377,490	3,613,647	609,474	7,953,089	15,548,355	66.0	8,006,482	6,160,291	5,923,425	3,679,933
Central of New Jersey	Oct.	660	4,313,945	629,941	5,249,2	472,740	846,198	44,774	1,891,092	3,369,564	64.2	1,879,725	1,307,406	1,039,711	281,980
	10 mos.	661	39,552,595	5,515,229	47,707,8	4,975,917	7,900,518	470,232	18,006,364	32,455,078	68.0	15,252,786	10,415,266	7,479,458	4,493,480
Central Vermont	Oct.	422	615,996	65,000	727,7	104,781	97,641	11,136	293,727	527,329	72.5	200,384	167,364	113,178	22,251
	10 mos.	422	5,754,991	640,000	6,807,0	879,767	975,477	110,682	2,670,461	4,858,748	71.4	1,948,263	1,628,383	1,162,431	1,203,528
Chesapeake & Ohio	Oct.	3,108	15,646,936	1,297,080	17,583,6	1,342,072	2,537,472	220,330	3,784,756	8,304,802	47.2	9,278,875	6,724,115	7,065,838	7,756,126
	10 mos.	3,118	136,681,613	8,609,733	150,553,9	13,621,367	25,143,261	2,205,763	34,287,846	78,976,763	52.5	71,577,174	27,776,716	30,388,688	38,888,392
Chicago & Eastern Illinois	Oct.	913	1,938,196	402,088	2,558,5	230,097	338,150	57,607	716,832	1,430,683	55.9	1,127,878	802,878	634,016	142,701
	10 mos.	921	14,463,484	3,145,725	19,367,3	1,947,638	3,241,136	596,920	6,500,332	13,075,039	67.5	6,292,262	4,317,262	2,954,554	1,696,381
Chicago & Illinois Midland	Oct.	131	515,363	976	542,3	57,385	66,540	21,196	121,714	290,371	53.5	251,936	94,133	93,109	93,628
	10 mos.	131	4,857,146	8,361	5,095,4	563,742	795,417	214,714	1,238,625	3,033,454	59.5	2,061,952	884,590	810,259	874,644
Chicago & North Western	Oct.	8,125	10,758,833	2,001,681	13,912,7	1,899,307	2,009,438	199,644	4,066,337	8,592,603	61.8	5,320,195	3,629,749	3,427,746	1,365,363
	10 mos.	8,234	87,801,661	16,114,563	113,828,6	15,062,705	19,646,545	1,961,991	37,530,411	78,121,565	68.6	35,707,062	22,504,009	20,740,086	15,696,749
Chicago, Burlington & Quincy	Oct.	9,054	13,778,690	2,095,362	17,354,4	2,083,118	2,113,656	255,557	4,296,492	9,205,099	53.0	8,149,302	4,742,642	4,515,073	1,923,999
	10 mos.	9,085	106,335,810	14,758,244	132,541,8	16,530,028	19,281,237	2,522,085	37,703,216	80,091,686	60.4	52,450,128	30,207,899	28,424,261	16,527,655
Chicago Great Western	Oct.	1,502	2,091,072	198,295	2,457,0	362,983	289,687	58,970	793,212	1,567,153	63.8	889,872	677,987	468,604	283,493
	10 mos.	1,502	18,304,947	1,250,297	20,894,9	2,410,576	2,729,330	612,661	7,116,541	13,495,227	64.6	7,399,721	4,461,385	2,618,438	2,490,824
Chicago, Indianapolis & Louisville	Oct.	549	944,723	100,354	1,124,603	128,054	163,400	29,345	312,677	671,224	59.7	453,379	409,737	366,797	289,913
	10 mos.	549	8,236,125	642,944	9,552,715	1,024,892	1,700,587	296,889	3,048,415	6,432,570	67.3	3,120,145	2,635,725	2,032,760	1,752,336

Table continued on second right-hand page

IT'S DINNERTIME IN AMERICA

IT'S DINNERTIME...or will be soon. What are you going to have? Steak's a little bit high. Maybe some lamb. Or chicken.

Enjoy it. Enjoy every bite of it while you can. Enjoy it even if it *is* rationed, even if you *do* pay more for it than you've paid in years.

At least you can still get it...

Not too far in the future...if the Japs and Nazis win...you may be glad to get a scrap of the cold skin of a chicken from a refuse pile. You may fight over a leaf of spoiled lettuce. May risk your life for a bone with a few scraps of meat on it.

Is this revolting? Does this seem drawing the picture a little too grim, a little too black?

It isn't. And it's time that we here in America realized it isn't. Right now, just to feed our armed forces, we are rationing certain foodstuffs. Can you imagine the shortages the Germans and Japs would make here if *they* took over?

Planned shortages. Planned as part of their revenge for our being a "have" nation. Planned as part of their scheme to keep us subjugated for generation after generation.

There's no reason why they should spare *us*, if they're victorious. They've spared no one else. People in Poland and Greece and Yugoslavia now grub for miserable shreds of food from garbage piles. People like *us*.

Think about it. Think of it as something we and our families may face. Think about it as one of the things that lost time, half-hearted effort, "letting the other fellow do it," can bring about. Think about it as one of the realities of war...and defeat.

This is no time to wait to be *told* what to do. There is a job for every one of us ...and a duty for every one of us *to find out what that job is*, and to *do* it.

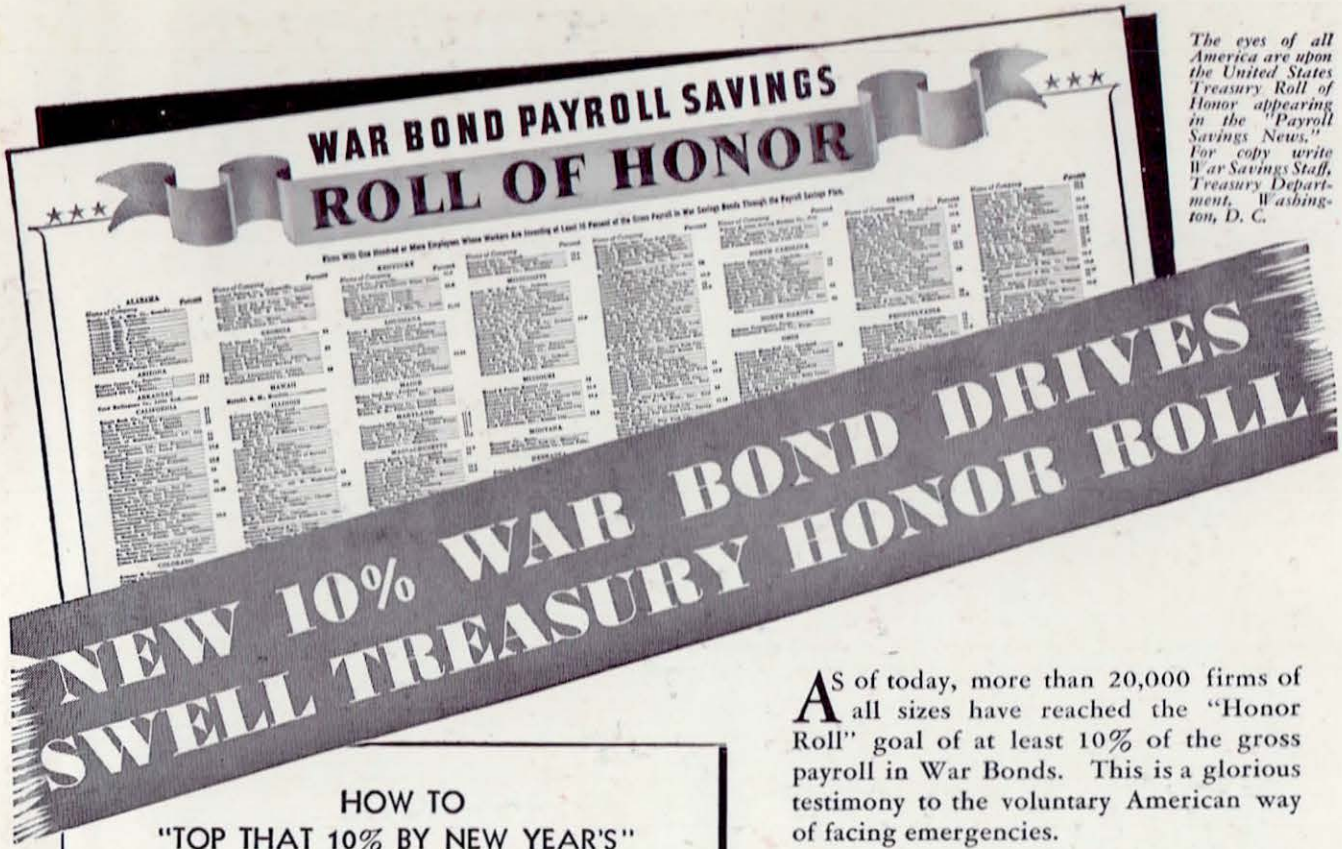
For us who sign this advertisement and for you who read it.

Not tomorrow. Not next week.

Now...

AMERICAN LOCOMOTIVE

30 CHURCH ST., NEW YORK, N. Y. • MANUFACTURERS OF TANKS • GUN CARRIAGES • ARMY AND NAVY ORDNANCE • STEAM AND DIESEL LOCOMOTIVES



The eyes of all America are upon the United States Treasury Roll of Honor appearing in the "Payroll Savings News." For copy write War Savings Staff, Treasury Department, Washington, D. C.

HOW TO "TOP THAT 10% BY NEW YEAR'S"

Out of the 13 labor-management conferences sponsored by the National Committee for Payroll Savings and conducted by the Treasury Department throughout the Nation has come this formula for reaching the 10% of gross payroll War Bond objective:

1. ***Decide to get 10%.***
   It has been the Treasury experience wherever management and labor have gotten together and decided the job could be done, the job was done.
2. ***Get a committee of labor and management to work out details for solicitation.***
   a. They, in turn, will appoint captain-leaders or chairmen who will be responsible for actual solicitation of no more than 10 workers.
   b. A card should be prepared for each and every worker with his name on it.
   c. An estimate should be made of the possible amount each worker can set aside so that an "over-all" of 10% is achieved. Some may not be able to set aside 10%, others can save more.
3. ***Set aside a date to start the drive.***
4. ***There should be little or no time between the announcement of the drive and the drive itself.***
   The drive should last not over 1 week.
5. The opening of the drive may be through a talk, a rally, or just a plain announcement in each department.
6. Schedule competition between departments; show progress charts daily.
7. Set as a goal the Treasury flag with a "T."

AS of today, more than 20,000 firms of all sizes have reached the "Honor Roll" goal of at least 10% of the gross payroll in War Bonds. This is a glorious testimony to the voluntary American way of facing emergencies.

But there is still more to be done. By January 1st, 1943, the Treasury hopes to raise participation from the present total of around 20,000,000 employees investing an average of 8% of earnings to over 30,000,000 investing an average of at least 10% of earnings in War Bonds.

You are urged to set your own sights accordingly and to do all in your power to start the new year on the Roll of Honor, to give War Bonds for bonuses, and to purchase up to the limit, both personally and as a company, of Series F and G Bonds. (Remember that the new limitation of purchases of F and G Bonds in any one calendar year has been increased from $50,000 to $100,000.)

TIME IS SHORT. Our country is counting on you to—

"TOP THAT 10% BY NEW YEAR'S"

EVERYBODY EVERY PAYDAY AT LEAST 10%

Save with War Savings Bonds

This space is a contribution to America's All-Out War Effort by RAILWAY AGE

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1942—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1942	1941
Chicago, Milwaukee, St. Paul & Pacific	Oct.	10,820	$15,009,379	$1,984,350	$18,594,984	$2,447,953	$2,410,145	$216,410	$4,968,552	$10,603,644	57.0	$7,991,340	$4,635,340	$4,224,980	$2,721,783
	10 mos.	10,821	120,521,545	13,467,948	146,589,748	21,797,509	21,432,883	2,352,882	45,583,898	96,175,626	65.6	50,414,122	30,423,122	27,385,497	24,555,795
Chicago, Rock Island & Pacific	Oct.	7,848	10,670,307	2,790,496	14,428,661	1,191,570	1,845,478	310,297	3,702,241	7,515,458	52.1	6,913,203	5,278,516	4,814,467	1,312,584
	10 mos.	7,919	84,175,154	18,574,813	110,180,964	11,335,550	15,936,540	2,911,116	33,818,353	68,390,188	62.1	41,790,776	33,711,949	29,952,853	15,647,382
Chicago, St. Paul, Minneapolis & Omaha	Oct.	1,629	1,856,028	286,100	2,299,504	278,298	308,082	40,495	861,786	1,560,371	67.9	739,133	607,193	531,128	140,105
	10 mos.	1,629	15,925,334	2,106,396	19,306,093	2,450,035	3,050,125	411,812	7,929,981	14,542,475	75.3	4,763,618	3,492,413	2,615,828	1,387,512
Clinchfield Railroad	Oct.	308	1,060,240	10,000	1,078,681	58,863	132,084	21,557	206,562	437,674	40.6	641,007	493,930	503,033	431,524
	10 mos.	308	10,104,731	66,891	10,236,833	563,051	1,375,360	214,185	1,984,804	4,324,693	42.2	5,912,140	4,738,520	4,837,601	4,609,954
Colorado & Southern	Oct.	755	787,961	196,753	1,076,426	97,430	141,724	15,008	332,311	633,364	58.8	443,062	388,483	347,083	223,913
	10 mos.	755	6,419,178	1,434,624	8,529,875	870,172	1,398,794	149,683	2,822,489	5,597,552	65.6	2,932,323	2,322,655	2,070,700	988,312
Fort Worth & Denver City	Oct.	804	676,532	305,492	1,125,652	80,674	109,949	22,912	265,138	531,434	47.2	594,218	615,621	560,314	64,758
	10 mos.	804	5,654,023	2,055,486	8,799,519	737,478	1,066,041	219,585	2,365,720	4,826,807	54.9	3,972,712	3,314,505	2,910,400	814,632
Colorado & Wyoming	Oct.	42	103,255	.....	152,736	19,040	10,668	937	53,102	89,052	58.3	63,684	23,727	22,886	40,949
	10 mos.	42	976,283	.....	1,514,207	157,589	127,473	8,835	514,574	853,631	56.3	660,576	236,486	230,590	353,626
Columbus & Greenville	Oct.	168	162,446	6,006	181,149	18,774	25,831	4,311	46,549	107,446	59.3	73,703	38,502	32,585	17,254
	10 mos.	168	1,068,647	37,985	1,182,438	224,462	185,349	45,659	376,941	948,862	80.2	233,576	85,387	92,012	121,800
Delaware & Hudson	Oct.	849	4,030,005	172,834	4,309,318	429,458	827,380	47,902	1,255,619	2,667,106	61.9	1,642,212	1,223,388	1,195,798	899,057
	10 mos.	849	35,780,591	1,404,099	38,134,788	3,728,048	7,396,173	447,935	12,011,488	24,640,038	64.6	13,494,750	8,393,160	7,789,333	7,356,807
Delaware, Lackawanna & Western	Oct.	984	5,154,796	847,118	6,618,029	693,137	963,575	102,997	2,318,085	4,252,803	64.3	2,365,226	1,211,226	1,177,584	492,217
	10 mos.	985	47,008,710	7,544,594	60,170,503	5,767,963	9,194,098	1,086,462	22,598,587	40,270,091	66.9	19,900,412	9,756,212	9,382,111	8,945,461
Denver & Rio Grande Western	Oct.	2,405	5,286,694	618,894	6,152,884	397,846	808,621	97,235	1,585,810	3,062,134	49.8	3,090,750	2,384,522	2,208,145	976,747
	10 mos.	2,419	37,592,337	3,699,176	43,137,889	3,303,299	7,318,961	896,071	12,482,378	25,324,648	58.7	17,813,241	14,976,229	14,340,565	3,460,865
Denver & Salt Lake	Oct.	232	318,145	6,638	338,254	26,212	47,285	2,709	92,075	178,997	52.9	159,257	131,021	183,402	135,591
	10 mos.	232	2,152,097	57,717	2,310,939	298,153	453,348	26,036	732,925	1,611,144	69.7	699,795	431,259	941,726	716,294
Detroit & Mackinac	Oct.	242	175,996	5,895	197,464	20,480	16,147	840	39,776	80,880	40.9	116,584	112,105	97,033	31,468
	10 mos.	242	820,666	42,187	962,499	143,301	132,402	7,433	282,267	598,082	62.1	364,417	326,399	270,706	53,795
Detroit & Toledo Shore Line	Oct.	50	360,362	.....	361,237	32,033	25,439	8,909	88,283	162,623	45.0	198,614	128,455	78,623	50,174
	10 mos.	50	3,452,233	.....	3,463,210	318,076	256,643	91,069	898,000	1,643,574	47.5	1,819,636	1,184,196	668,731	751,584
Detroit, Toledo & Ironton	Oct.	464	663,218	711	705,945	75,349	115,442	13,759	161,405	388,389	55.0	317,556	201,732	216,445	227,758
	10 mos.	465	6,563,200	5,117	6,934,446	765,473	1,118,671	138,789	1,714,685	3,962,345	57.1	2,972,101	1,720,047	1,668,205	2,484,954
Duluth, Missabe & Iron Range	Oct.	546	4,549,300	3,789	5,300,190	284,553	352,578	4,717	932,972	1,613,120	30.4	3,687,070	1,570,214	1,570,112	2,111,058
	10 mos.	542	33,808,612	22,538	39,370,602	2,694,728	3,472,240	43,002	6,442,918	13,016,946	33.1	26,353,656	7,033,999	7,024,211	14,266,822
Duluth, Winnipeg & Pacific	Oct.	175	167,000	1,100	173,200	33,453	24,446	2,025	61,816	125,346	72.4	47,854	33,995	19,497	—18,118
	10 mos.	175	1,692,700	12,600	1,742,300	336,866	250,276	20,178	647,736	1,289,761	74.0	452,539	317,202	123,211	16,666
Elgin, Joliet & Eastern	Oct.	392	2,645,855	11	3,028,371	173,940	569,339	16,417	936,650	1,747,262	57.7	1,281,109	601,638	514,307	498,487
	10 mos.	392	24,862,548	180	28,162,177	1,999,567	5,362,844	164,689	9,269,609	17,294,195	61.4	10,867,982	3,884,468	2,744,020	5,525,350
Erie	Oct.	2,243	10,906,252	713,901	12,358,885	1,133,860	1,869,907	199,356	3,821,884	7,361,813	59.6	4,997,072	2,774,001	2,339,843	2,175,661
	10 mos.	2,249	98,165,642	6,092,829	110,906,130	10,563,530	18,056,964	1,942,540	36,602,841	70,450,889	63.5	40,455,241	24,464,485	20,379,351	18,673,904
Florida East Coast	Oct.	685	1,034,957	631,190	1,806,685	217,490	232,850	34,008	432,335	1,000,031	55.4	806,654	535,194	501,047	11,359
	10 mos.	685	9,456,579*	5,445,266	16,167,300	1,655,256	1,938,072	333,353	4,502,922	9,255,568	57.2	6,911,732	5,946,462	5,564,341	1,205,176
Georgia Railroad	Oct.	329	665,236	179,731	895,871	91,830	83,528	22,168	260,471	475,372	53.1	420,499	394,703	373,009	189,716
	10 mos.	329	5,945,161	1,074,459	7,383,129	609,874	782,639	212,970	2,367,599	4,134,373	56.0	3,248,756	3,020,190	2,893,745	1,117,253
Georgia & Florida	Oct.	408	129,139	4,453	139,563	36,884	22,722	9,450	47,629	123,374	98.8	16,189	6,992	2,965	27,629
	10 mos.	408	1,394,604	40,640	1,485,970	360,402	200,741	98,775	487,611	1,212,018	81.6	273,952	183,061	106,923	108,688
Grand Trunk Western	Oct.	1,026	2,461,000	172,000	2,800,000	219,608	448,516	38,753	1,092,007	1,893,948	67.6	906,052	557,192	502,289	227,984
	10 mos.	1,026	22,267,000	1,419,000	25,226,000	3,139,613	4,424,794	385,687	9,592,122	18,364,172	72.8	6,861,828	5,197,812	4,522,678	5,342,039
Canadian National Lines in New England	Oct.	172	121,100	4,900	139,400	57,337	21,867	2,582	82,764	175,941	126.2	—36,541	—55,061	—90,883	—16,295
	10 mos.	172	1,591,200	57,700	1,792,500	533,727	248,626	25,678	891,077	1,813,303	101.2	—20,803	—206,003	—733,957	—456,573
Great Northern	Oct.	8,118	16,461,283	1,066,328	18,897,840	1,730,857	2,391,530	199,552	4,092,770	8,804,266	46.6	10,093,574	7,011,682	6,708,227	2,839,080
	10 mos.	8,089	118,401,725	6,788,691	135,473,817	15,880,564	21,684,133	2,062,794	34,099,701	77,048,871	56.9	58,424,946	33,244,682	31,829,813	25,711,062
Green Bay & Western	Oct.	234	198,531	351	204,813	60,844	21,015	6,716	56,400	151,280	73.8	53,533	28,179	21,473	24,444
	10 mos.	234	1,838,800	3,648	1,898,658	393,103	227,345	85,174	557,564	1,318,565	69.4	580,093	358,946	279,292	257,197
Gulf & Ship Island	Oct.	259	201,888	40,482	264,277	35,339	34,331	2,816	83,225	164,589	62.3	99,688	82,597	64,128	—2,185
	10 mos.	259	1,606,342	254,923	2,020,749	304,879	249,446	30,151	742,352	1,399,645	69.3	621,104	446,160	293,357	47,092

Table continued on next left-hand page

* Freight revenue of this company for September was incorrectly reported in the *Railway Age* of November 7. The correct figure for that month was $1,047,929.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1942—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1942	Net railway operating income 1941
Gulf, Mobile & Ohio	Oct.	1,969	$3,159,957	$172,349	$3,423,996	$432,151	$501,752	$87,366	$858,318	$1,992,799	58.2	$1,431,197	$870,297	$650,748	$338,877
	10 mos.	1,969	25,069,109	1,032,145	26,999,719	3,528,418	4,042,972	865,740	7,269,457	16,708,440	61.9	10,291,279	6,240,879	4,447,372	3,217,487
Illinois Central	Oct.	4,853	14,671,399	1,902,732	17,589,868	2,935,782	3,370,242	210,954	4,527,367	11,566,815	65.8	6,023,053	3,620,874	3,118,457	1,280,827
	10 mos.	4,918	121,502,093	15,516,535	145,272,601	17,974,866	29,041,009	2,175,250	42,488,848	96,303,176	66.3	48,969,425	24,371,489	20,672,532	17,556,878
Yazoo & Mississippi Valley	Oct.	1,525	3,159,879	305,654	3,612,050	461,197	377,781	33,629	924,924	1,880,842	52.1	1,731,208	1,289,146	1,136,619	525,401
	10 mos.	1,542	25,735,172	1,901,839	28,690,849	2,215,495	3,472,344	354,717	7,657,686	14,402,672	50.2	14,288,177	12,323,655	11,108,874	3,556,874
Illinois Central System	Oct.	6,378	17,831,278	2,208,386	21,201,918	3,396,979	3,748,023	244,583	5,452,291	13,447,657	63.4	7,754,261	4,909,541	4,254,989	1,807,641
	10 mos.	6,460	147,237,265	17,418,374	173,963,450	20,190,361	32,513,353	2,529,967	50,146,534	110,705,848	63.6	63,257,602	36,645,404	31,823,535	21,183,881
Illinois Terminal	Oct.	476	672,102	163,830	916,910	59,315	89,520	20,008	244,843	439,243	47.90	477,667	—187,026	—211,745	170,399
	10 mos.	476	5,536,253	1,150,192	7,386,165	597,855	823,683	188,221	2,211,247	4,088,047	55.35	3,298,118	1,706,593	1,470,411	1,357,402
Kansas City Southern	Oct.	880	2,786,359	243,308	3,245,041	897,466	338,025	56,221	751,434	2,146,413	66.1	1,098,628	429,628	191,495	351,891
	10 mos.	880	24,110,524	1,912,039	27,771,036	4,440,917	3,380,321	570,920	6,671,201	15,898,028	57.2	11,873,008	7,172,008	5,143,719	3,529,401
Kansas, Oklahoma & Gulf	Oct.	328	332,039	1,276	336,398	10,417	22,073	9,781	69,231	121,913	36.2	214,485	131,974	106,335	61,010
	10 mos.	328	2,519,565	7,844	2,554,234	231,953	143,854	96,713	604,271	1,186,415	46.4	1,367,819	846,245	628,014	693,962
Lake Superior & Ishpeming	Oct.	156	341,254	170	428,200	36,363	37,491	683	68,698	150,874	35.2	277,326	73,078	80,920	72,841
	10 mos.	156	2,463,414	851	3,148,443	328,089	387,627	6,602	559,964	1,358,514	43.1	1,789,929	758,612	827,655	976,656
Lehigh & Hudson River	Oct.	96	258,629	6,419	266,167	38,064	28,918	4,254	70,960	149,048	56.0	117,119	85,421	57,840	46,061
	10 mos.	96	2,816,846	33,977	2,870,713	322,017	298,731	43,563	793,378	1,527,435	53.2	1,343,278	686,794	370,719	324,127
Lehigh & New England	Oct.	190	504,544	.....	508,422	40,618	113,966	6,850	148,398	327,014	64.3	181,408	65,660	78,962	122,086
	10 mos.	190	5,150,741	.....	5,181,476	415,276	1,036,649	71,182	1,452,523	3,148,420	60.8	2,033,056	1,079,128	1,215,947	1,225,517
Lehigh Valley	Oct.	1,262	6,734,759	394,368	7,678,236	615,375	1,144,808	106,353	2,445,683	4,486,400	58.4	3,191,836	1,952,844	1,451,988	613,157
	10 mos.	1,263	56,818,556	3,115,619	63,659,486	5,705,865	10,069,529	1,053,655	22,764,696	41,199,843	64.7	22,459,643	13,867,054	10,070,245	9,098,682
Louisiana & Arkansas	Oct.	877	1,465,444	82,573	1,600,990	469,707	149,198	30,106	296,774	992,850	62.0	608,140	241,013	176,445	269,521
	10 mos.	877	11,304,539	736,888	12,519,256	2,354,797	1,446,102	312,789	2,841,341	7,423,613	59.3	5,095,643	2,560,868	1,894,378	1,963,587
Louisville & Nashville	Oct.	4,751	12,697,760	2,493,478	16,131,182	1,329,043	2,495,030	180,712	4,444,568	8,927,977	55.3	7,203,205	2,941,100	3,253,863	2,866,335
	10 mos.	4,784	111,745,199	18,047,770	136,892,998	12,212,322	23,107,643	1,927,284	40,194,430	81,420,722	59.5	55,472,276	17,729,126	19,629,229	21,994,990
Maine Central	Oct.	...	1,173,829	292,355	1,577,496	184,679	246,443	12,440	470,054	961,260	60.9	616,236	345,675	319,521	192,273
	10 mos.	...	11,461529	1,968,053	14,451,921	1,971,562	2,634,954	124,090	4,824,750	9,989,757	69.1	4,462,164	2,556,273	2,293,715	2,383,534
Midland Valley	Oct.	351	152,723	5	155,095	13,527	10,029	2,306	42,682	73,201	47.2	81,894	85,019	76,256	58,485
	10 mos.	351	1,208,629	75	1,231,763	177,942	96,258	23,994	372,021	730,164	59.3	501,599	387,937	290,000	373,469
Minneapolis & St. Louis	Oct.	1,409	1,306,699	24,530	1,379,972	174,742	178,342	63,657	380,162	841,131	61.0	538,841	473,304	417,045	191,372
	10 mos.	1,409	10,434,839	245,420	11,068,658	1,633,401	1,597,682	575,849	3,462,876	7,711,403	69.7	3,357,255	2,769,630	2,413,275	1,304,774
Minneapolis, St. Paul & Sault Ste. Marie	Oct.	4,277	4,161,697	162,525	4,584,109	598,329	590,067	69,786	1,344,708	2,715,766	59.2	1,868,343	1,506,416	1,465,017	780,001
	10 mos.	4,277	32,178,388	1,240,973	35,648,571	5,168,338	5,687,704	692,666	12,525,452	25,160,485	70.6	10,488,086	7,238,023	6,588,444	5,341,135
Duluth, South Shore & Atlantic	Oct.	550	386,407	17,542	431,936	68,745	61,103	8,365	136,803	282,634	65.4	149,302	129,861	111,070	99,799
	10 mos.	550	3,263,414	143,875	3,637,900	610,902	523,665	82,945	1,225,285	2,511,601	69.0	1,126,299	938,933	856,774	557,569
Spokane International	Oct.	152	189,063	1,818	198,505	26,797	5,759	2,887	35,600	75,847	38.2	122,658	75,047	62,858	28,442
	10 mos.	152	1,215,428	16,025	1,307,628	213,510	82,056	26,585	312,406	682,154	52.2	625,474	392,926	324,817	180,027
Mississippi Central	Oct.	158	151,464	9,552	163,284	23,780	15,703	8,421	34,196	87,504	53.6	75,780	28,186	20,051	24,051
	10 mos.	158	1,273,609	47,694	1,337,260	238,757	145,562	81,962	298,756	812,001	60.7	525,259	384,837	307,815	145,148
Missouri & Arkansas	Oct.	365	154,447	3,625	164,764	64,749	27,991	7,621	61,917	169,084	102.6	—4,320	4,789	—7,448	7,223
	10 mos.	365	1,286,631	23,120	1,384,990	321,814	164,005	77,838	487,828	1,109,884	80.1	275,106	156,999	41,065	61,020
Missouri-Illinois	Oct.	172	328,083	290	329,769	41,050	20,430	3,423	83,741	155,235	47.1	174,534	27,574	7,450	27,018
	10 mos.	172	2,713,084	2,556	2,728,862	312,142	258,524	35,118	644,066	1,302,943	47.7	1,425,919	681,492	544,795	517,746
Missouri-Kansas-Texas Lines	Oct.	3,293	4,850,691	904,431	6,183,003	1,246,172	815,536	120,833	1,622,784	3,998,280	64.7	2,184,723	1,682,971	1,331,179	459,874
	10 mos.	3,293	35,928,704	6,107,451	45,303,904	8,096,322	6,845,955	1,193,916	13,617,615	31,450,341	69.4	13,853,563	10,712,015	7,634,615	3,722,717
Missouri Pacific	Oct.	7,113	16,265,160	2,021,300	19,436,941	1,811,385	2,191,931	271,542	4,926,030	9,659,913	49.7	9,777,028	6,544,064	5,466,665	2,350,004
	10 mos.	7,133	119,952,666	14,336,917	143,799,935	14,986,040	19,374,297	2,715,116	41,262,923	82,161,116	57.1	61,638,819	48,897,167	41,298,902	19,573,998
Gulf Coast Lines	Oct.	...	.....	.....	.....	.....	.....	.....	.....	.....	...	.....	.....	.....	.....
	10 mos.	...	.....	.....	.....	.....	.....	.....	.....	.....	...	.....	.....	.....	.....
International Great Northern	Oct.	1,155	1,803,293	338,147	2,330,883	259,437	294,023	32,693	620,816	1,291,945	55.4	1,038,938	959,759	852,380	137,235
	10 mos.	1,155	13,697,999	2,135,057	17,333,931	2,272,144	2,555,242	316,742	5,660,353	11,503,146	66.4	5,830,785	5,084,590	4,180,790	1,120,241
Monongahela	Oct.	171	567,997	1,013	571,919	65,066	47,409	692	128,713	244,845	42.8	327,074	199,766	108,871	248,454
	10 mos.	171	5,840,215	8,143	5,871,092	628,211	450,279	5,521	1,301,513	2,416,725	41.2	3,454,367	2,181,163	1,238,136	1,668,487

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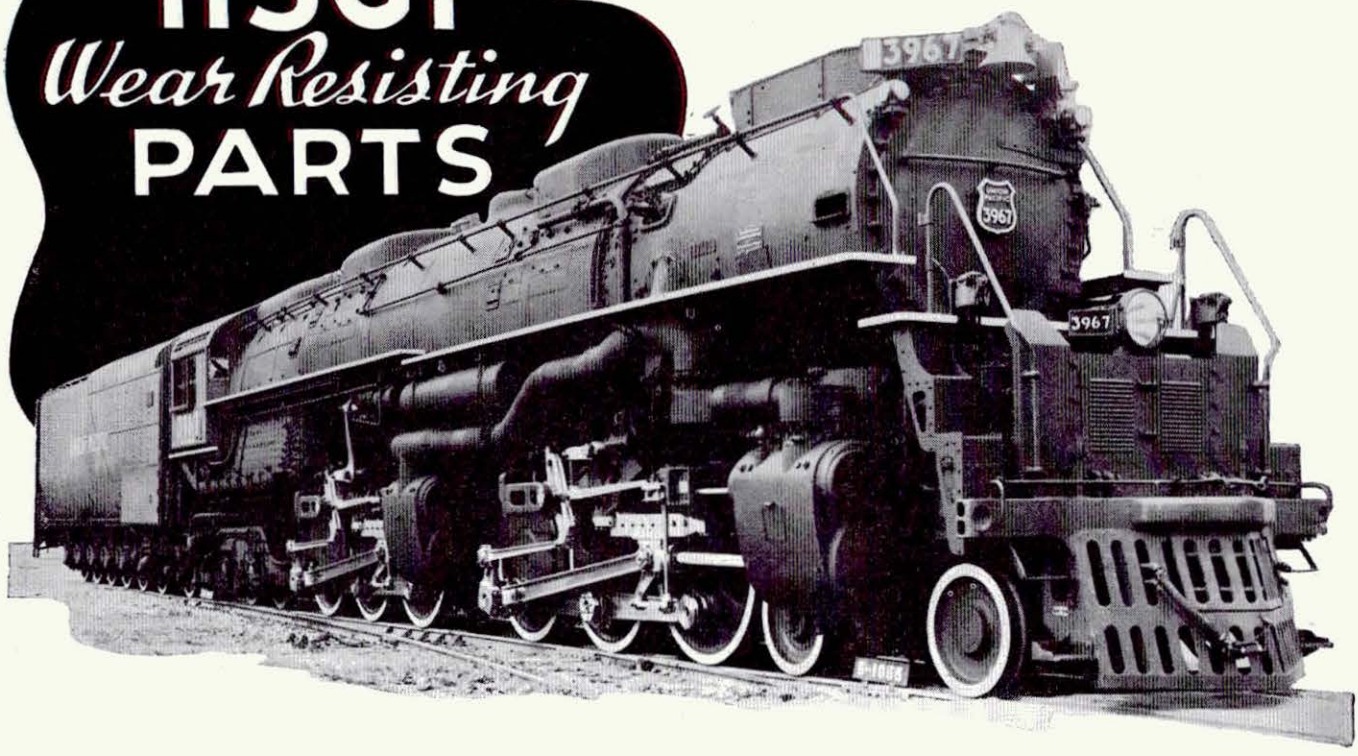
HSGI *Wear Resisting* PARTS



HELP TO MEET WAR-TIME SCHEDULES

THE railroads have accomplished their war-time job with 20,000 fewer locomotives and a half a million fewer freight cars than they used in the last war.

In addition to other factors, high quality materials have played a big part in this widely acclaimed achievement.

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The service built into HSGI Parts has not only measured up to all requirements but it has also proven that complete applications insure the best results.

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HUNT-SPILLER *Air Furnace* GUN IRON

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1942—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1942	Net railway operating income 1941
Montour	Oct.	51	$256,634	$.....	$257,747	$16,709	$53,719	$824	$58,436	$138,097	53.6	$119,650	$74,162	$111,147	$94,857
	10 mos.	51	2,269,731	.....	2,283,979	162,154	524,991	8,246	561,288	1,331,800	58.3	952,179	322,056	695,604	720,199
Nashville, Chattanooga & St. Louis	Oct.	1,111	2,588,738	537,330	3,354,935	292,884	523,131	70,427	956,385	1,933,363	57.6	1,421,572	907,108	840,155	268,249
	10 mos.	1,111	18,964,331	3,386,172	24,140,521	2,468,127	4,184,235	732,858	7,899,261	16,050,752	66.5	8,089,769	4,829,447	4,474,592	2,773,806
Nevada Northern	Oct.	165	57,427	1,080	61,291	9,900	2,940	1,244	9,590	28,719	46.9	32,572	20,220	22,976	579
	10 mos.	165	552,884	9,036	592,869	101,943	34,313	12,063	96,309	302,900	51.1	289,969	118,125	139,796	148,052
New York Central	Oct.	10,899	41,114,395	11,305,493	57,762,969	7,050,779	9,317,730	561,547	17,374,245	36,038,854	62.4	21,724,115	13,131,710	11,675,306	3,762,013
	10 mos.	10,914	352,960,018	90,528,385	486,556,328	55,612,081	89,941,467	5,865,683	162,222,389	330,373,001	67.9	156,183,327	85,739,076	70,531,750	49,908,955
Pittsburgh & Lake Erie	Oct.	233	2,935,496	92,400	3,112,914	320,170	816,555	41,361	775,955	2,051,415	65.9	1,061,499	61,691	557,577	589,143
	10 mos.	233	26,955,624	730,378	28,430,525	2,425,567	8,050,847	399,295	7,880,995	19,718,529	69.4	8,711,996	826,009	5,427,179	6,081,344
New York, Chicago & St. Louis	Oct.	1,688	8,227,963	240,901	8,608,021	656,546	999,845	128,096	2,306,463	4,243,922	49.3	4,364,099	2,622,509	2,109,687	2,414,772
	10 mos.	1,688	69,736,262	1,656,741	72,617,115	5,875,247	8,741,076	1,304,802	20,991,032	38,388,590	52.9	34,228,525	17,066,905	11,769,428	13,586,892
New York, New Haven & Hartford	Oct.	1,839	7,913,479	5,535,232	14,649,160	1,457,777	1,905,243	137,030	4,241,648	8,355,759	57.0	6,293,401	4,093,400	3,283,002	661,116
	10 mos.	1,841	74,014,482	44,242,855	127,908,081	12,995,502	17,085,139	1,325,313	39,458,408	76,436,793	59.8	51,471,288	33,683,488	24,444,705	13,708,379
New York Connecting	Oct.	21	228,448	.....	255,299	84,923	11,043	.....	45,363	142,902	56.0	112,397	18,337	138,082	125,700
	10 mos.	21	2,268,112	.....	2,428,938	666,230	99,341	.....	405,704	1,186,979	48.9	1,241,959	676,019	1,514,020	2,641,018
New York, Ontario & Western	Oct.	547	563,462	5,051	620,374	75,920	122,147	20,269	289,593	524,249	84.5	96,125	64,776	36,704	—6,804
	10 mos.	547	5,390,226	477,121	6,320,009	731,798	1,207,064	198,828	3,030,493	5,375,464	85.1	944,545	630,075	176,137	—125,297
New York, Susquehanna & Western	Oct.	262	339,482	38,444	414,903	36,330	32,845	4,007	144,638	232,578	56.0	182,325	125,922	70,983	39,114
	10 mos.	262	3,068,269	355,448	3,623,713	281,360	313,600	30,692	1,288,735	2,039,450	56.3	1,584,263	1,204,805	777,937	628,354
Norfolk & Western	Oct.	2,159	11,388,939	1,378,014	13,188,745	1,214,404	2,473,419	154,593	2,625,096	6,740,289	51.1	6,448,456	2,117,804	2,737,655	2,097,900
	10 mos.	2,168	104,881,082	7,330,728	115,366,165	11,724,122	23,603,031	1,563,307	24,029,237	63,535,548	55.1	51,830,617	13,789,072	18,958,568	25,297,492
Norfolk Southern	Oct.	733	668,348	25,895	720,486	126,640	72,388	27,912	218,159	471,111	65.4	249,375	124,541	87,454	58,870
	10 mos.	733	6,161,717	193,068	6,574,614	1,040,594	694,459	282,230	2,011,363	4,284,141	65.2	2,290,473	1,387,462	1,078,810	670,975
Northern Pacific	Oct.	6,883	11,052,633	1,043,080	13,064,861	1,327,140	1,852,157	183,657	3,183,603	6,969,694	53.4	6,095,167	3,480,605	3,817,416	2,108,422
	10 mos.	6,889	81,668,067	6,767,128	95,650,986	12,442,893	17,547,049	1,762,215	27,600,567	63,055,179	65.9	32,595,807	18,256,295	21,917,621	17,288,441
Northwestern Pacific	Oct.	335	580,737	14,858	617,780	88,990	50,861	3,108	158,697	309,357	50.1	308,423	285,619	264,904	57,127
	10 mos.	342	3,895,781	110,519	4,184,897	990,623	510,285	25,363	1,444,880	3,043,923	72.7	1,140,974	921,195	736,195	—42,639
Oklahoma City-Ada-Atoka	Oct.	132	114,529	.....	115,473	18,322	4,701	1,210	32,405	61,038	52.9	54,435	38,313	17,443	3,970
	10 mos.	132	1,049,279	4	1,063,261	127,547	39,658	10,690	256,402	468,580	44.1	594,681	388,696	260,138	26,378
Pennsylvania	Oct.	10,215	59,326,301	16,574,525	82,264,406	7,373,526	12,284,872	870,743	25,312,600	48,023,182	58.4	34,241,224	20,635,719	19,613,749	7,580,606
	10 mos.	10,215	508,571,276	133,899,864	691,505,861	73,708,763	123,035,241	8,260,990	231,619,488	455,741,961	65.9	235,763,900	127,782,483	115,570,557	81,791,327
Long Island	Oct.	378	1,154,683	1,779,531	3,082,103	653,710	409,094	90,499	1,294,554	2,492,954	80.9	589,149	187,670	—4,451	—274,591
	10 mos.	378	9,600,480	18,168,665	29,082,150	4,214,074	4,308,695	186,511	11,842,092	21,082,098	72.5	8,000,052	3,858,227	1,988,200	848,499
Pennsylvania-Reading Seashore Lines	Oct.	404	471,631	233,194	736,173	116,394	83,785	7,643	354,122	580,124	78.8	156,049	62,423	—34,409	—202,064
	10 mos.	406	4,375,747	3,285,501	7,971,808	1,024,533	970,335	89,889	3,820,171	6,089,231	76.4	1,882,577	796,347	—302,919	—660,501
Pere Marquette	Oct.	2,050	3,984,636	182,478	4,372,376	587,297	749,314	65,658	1,361,106	2,875,935	65.8	1,496,441	850,630	785,567	457,154
	10 mos.	2,055	32,546,331	1,652,851	35,927,151	4,752,763	7,267,356	690,953	12,599,879	26,469,077	73.7	9,458,074	5,542,177	5,023,527	5,248,797
Pittsburg & Shawmut	Oct.	97	113,652	.....	114,032	34,602	19,138	2,108	29,792	90,561	79.4	23,471	20,411	18,538	33,104
	10 mos.	97	1,038,006	.....	1,043,855	178,774	185,447	20,964	265,056	701,842	67.2	342,013	309,235	280,697	185,514
Pittsburgh & West Virginia	Oct.	136	586,052	57	607,803	87,402	120,637	19,533	134,284	387,443	63.7	220,360	153,386	158,014	162,271
	10 mos.	136	5,187,682	407	5,372,788	844,954	1,021,994	194,611	1,200,611	3,508,140	65.3	1,864,648	1,410,081	1,462,264	1,291,968
Pittsburg, Shawmut & Northern	Oct.	190	126,396	.....	127,645	17,432	29,634	1,038	45,245	99,033	77.6	28,612	21,650	14,132	20,534
	10 mos.	190	1,223,834	.....	1,238,106	220,721	292,152	11,402	432,179	1,012,379	81.8	225,727	157,182	80,592	253,853
Reading	Oct.	1,420	7,998,421	741,532	9,146,235	747,046	1,691,583	72,744	2,879,124	5,563,377	60.8	3,582,858	2,301,765	2,172,537	1,480,456
	10 mos.	1,426	75,063,733	5,882,195	84,734,211	6,942,686	16,105,757	737,668	27,477,112	52,976,516	62.5	31,757,695	19,202,971	17,478,186	13,902,474
Richmond, Fredericksburg & Potomac	Oct.	118	1,432,534	986,545	2,635,416	163,779	236,530	10,992	618,007	1,100,701	41.7	1,534,715	417,269	272,447	120,332
	10 mos.	118	12,175,737	8,485,423	22,419,252	1,283,012	1,966,409	108,294	5,469,405	9,563,008	42.7	12,856,244	3,784,297	2,556,974	2,121,328
Rutland	Oct.	407	270,335	53,146	392,467	49,975	67,779	10,430	171,443	311,406	79.3	81,061	59,428	62,504	25,303
	10 mos.	407	2,515,852	443,196	3,578,468	409,199	660,437	106,784	1,611,747	2,906,114	81.2	672,354	467,577	496,782	231,931
St. Louis-San Francisco	Oct.	4,674	7,084,229	1,499,068	9,168,928	724,696	1,454,173	140,183	2,498,299	5,021,465	54.8	4,147,463	3,641,642	3,607,650	1,597,855
	10 mos.	4,729	54,099,297	9,825,018	68,673,145	6,728,411	12,171,653	1,349,592	21,983,231	44,677,302	65.1	23,995,843	19,813,340	19,867,537	10,425,554
St. Louis, San Francisco & Texas	Oct.	159	331,883	19,977	359,716	27,130	25,037	9,331	86,826	154,544	42.3	205,172	171,998	147,476	21,229
	10 mos.	159	2,582,982	95,284	2,740,836	274,060	226,795	91,654	785,746	1,437,802	52.5	1,303,034	1,177,071	913,183	127,301

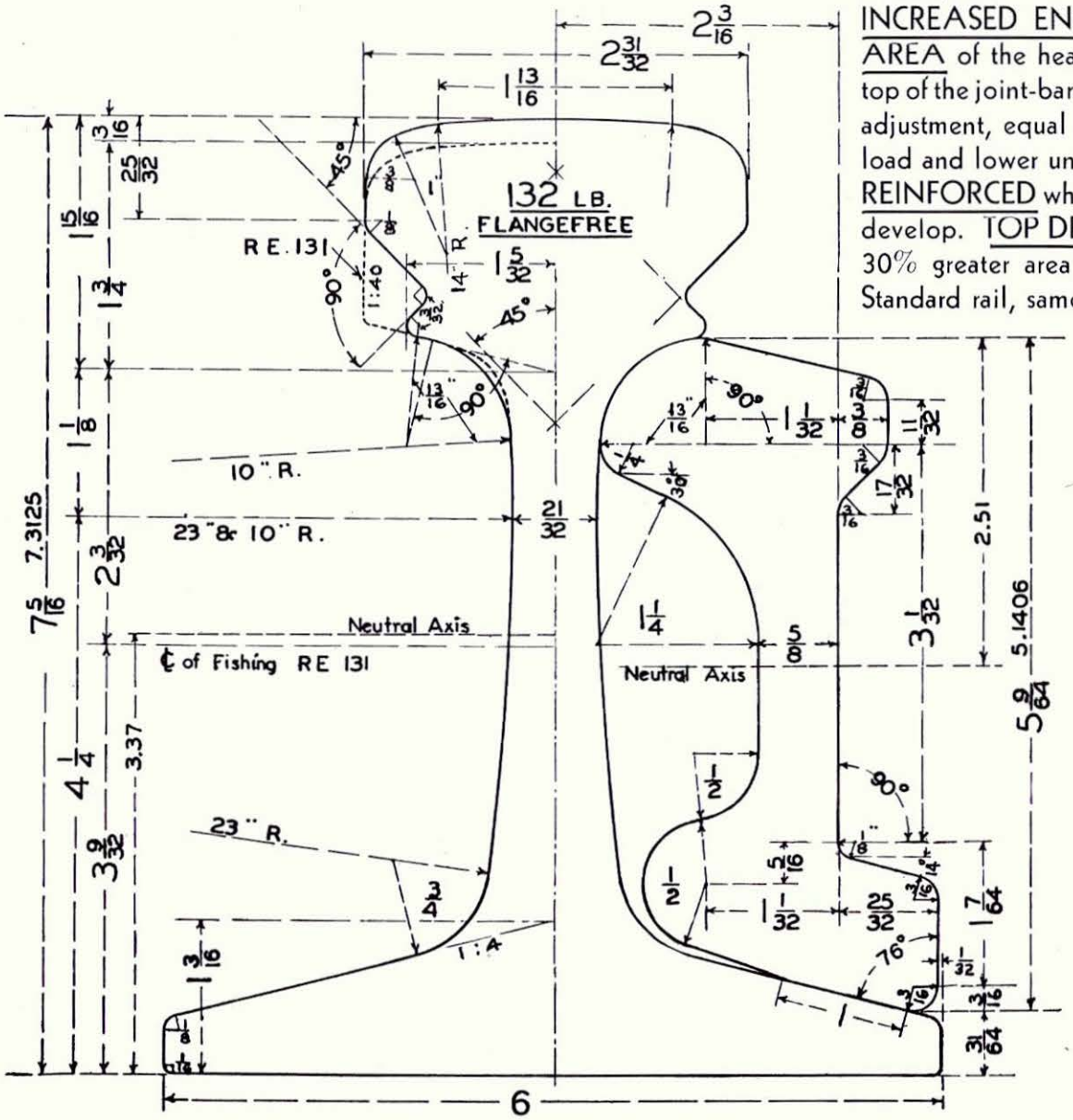
Table continued on next left-hand page

FLANGEFREE RAIL

WHEEL-FLANGE CLEARANCE is maintained as wear develops.

INCREASED ENGAGEMENT AREA of the head arc with the top of the joint-bar assures precise adjustment, equal distribution of load and lower unit pressure.

REINFORCED where fillet cracks develop. TOP DEPTH provides 30% greater area of wear than Standard rail, same as Headfree.



WHEN steel is available we will turn up rolls for Flangefree Rail Sections and Joint Bars, Licensing Railroads to purchase direct from the mills as has been the practice with Headfree Rail.

Pat'd U. S. A. and Canada

THE THOMSON RAIL CORPORATION OF NEW YORK

Pennsylvania Building, Philadelphia, Pa.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1942—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1942	Net railway operating income 1941
St. Louis Southwestern Lines	Oct.	1,617	$4,487,520	$212,527	$4,818,806	$323,944	$417,955	$96,115	$1,135,672	$2,084,596	43.3	$2,734,210	$1,460,158	$1,128,084	$958,473
	10 mos.	1,617	36,230,206	1,651,767	38,850,091	3,458,480	3,939,990	964,680	9,843,944	19,208,156	49.4	19,641,935	10,458,246	7,590,262	5,825,554
Seaboard Air Line	Oct.	4,232	7,040,451	2,607,995	10,276,731	903,544	1,346,824	203,709	2,859,941	5,701,822	55.5	4,574,909	3,074,909	2,726,783	531,083
	10 mos.	4,267	61,252,046	21,350,158	87,857,870	8,566,129	12,578,705	2,029,442	25,947,885	52,496,612	59.8	35,361,258	27,561,258	24,360,868	8,307,735
Southern Railway	Oct.	6,519	14,891,374	3,969,102	20,011,735	1,977,719	2,728,947	196,471	4,930,188	10,407,757	52.0	9,603,978	4,604,396	4,295,069	2,710,532
	10 mos.	6,519	128,394,434	27,904,576	165,590,286	16,738,390	25,545,277	1,906,132	44,905,822	94,057,272	56.8	71,533,014	35,292,772	32,814,375	26,699,260
Alabama Great Southern	Oct.	315	1,464,575	322,254	1,875,488	131,153	253,553	25,161	481,670	938,913	50.1	936,575	184,058	126,740	182,714
	10 mos.	315	12,899,212	2,337,996	15,975,232	1,162,297	2,240,410	216,370	4,114,879	8,131,490	50.9	7,843,742	2,202,368	1,594,459	1,916,050
Cincinnati, New Orleans & Texas Pacific	Oct.	337	2,134,371	427,084	2,680,073	276,898	441,110	32,639	595,070	1,420,647	53.0	1,259,426	351,151	346,054	429,164
	10 mos.	337	20,548,527	3,061,389	24,646,772	2,423,103	4,617,734	315,234	5,720,610	13,772,185	55.9	10,874,587	4,033,170	3,854,861	5,004,470
Georgia Southern & Florida	Oct.	398	332,154	155,584	528,257	63,572	43,626	2,435	137,665	259,690	49.2	268,567	198,779	166,269	4,588
	10 mos.	398	2,730,922	1,102,179	4,128,256	560,941	472,992	25,309	1,240,169	2,416,008	58.5	1,712,248	1,077,183	812,643	444,754
New Orleans & Northeastern	Oct.	204	851,372	204,634	1,104,721	88,450	100,364	12,826	252,144	482,335	43.7	622,386	—63,664	—155,266	137,066
	10 mos.	204	7,738,866	1,365,087	9,513,457	696,056	731,330	114,391	2,276,320	4,071,051	42.8	5,442,406	2,132,690	1,302,085	1,131,840
Southern Pacific Co.	Oct.	8,365	28,114,589	6,526,218	37,341,099	2,583,708	5,666,264	462,007	10,307,646	20,763,107	55.6	16,577,992	11,573,540	10,103,470	5,884,395
	10 mos.	8,497	230,417,499	43,920,847	296,064,001	23,872,593	46,614,594	4,188,426	90,099,157	178,840,490	60.4	117,223,511	71,726,476	59,580,350	41,547,727
Southern Pacific Steamship Lines	Oct.	...	1,253	Dr. 49	1,201	.....	.....	.....	4,505	5,233	435.7	—4,032	—4,105	—4,105	—39,123
	10 mos.	...	521	132	3,642	79,136	12	136	26,051	129,825	In excess of 999	—126,183	—128,728	—128,728	93,241
Texas & New Orleans	Oct.	4,341	8,114,363	1,597,379	10,288,054	900,116	980,887	139,080	2,415,146	4,749,665	46.2	5,538,389	3,838,810	3,325,682	1,818,056
	10 mos.	4,396	65,898,355	10,353,607	80,640,119	8,808,260	9,165,498	1,382,730	20,409,818	42,495,493	52.7	38,144,626	22,815,479	18,699,134	10,822,558
Spokane, Portland & Seattle	Oct.	930	1,857,831	101,127	2,085,131	155,417	145,436	11,758	540,152	902,498	43.3	1,182,633	1,094,004	897,983	479,242
	10 mos.	933	14,410,904	623,758	15,905,621	1,638,096	1,245,831	117,606	4,547,756	7,972,933	50.1	7,932,688	6,978,712	5,609,624	2,626,496
Tennessee Central	Oct.	286	340,396	30,011	393,301	66,058	52,809	5,420	114,808	253,551	64.5	139,750	89,687	71,427	39,323
	10 mos.	286	2,992,833	133,185	3,305,162	712,643	486,896	66,279	1,070,619	2,465,844	74.6	839,318	563,254	411,916	380,469
Texas & Pacific	Oct.	1,903	3,439,051	1,243,373	5,188,989	457,656	688,095	94,267	1,234,220	2,698,079	52.0	2,490,910	1,681,664	1,590,977	681,356
	10 mos.	1,895	29,207,180	8,144,995	40,693,804	4,127,597	6,317,227	853,567	10,792,179	23,854,899	58.6	16,838,905	10,363,445	9,341,750	5,491,914
Texas Mexican	Oct.	162	109,414	380	131,723	26,396	13,937	3,972	36,740	88,699	67.3	43,024	35,995	29,610	14,050
	10 mos.	162	1,212,400	4,024	1,427,243	222,798	139,729	38,290	403,383	885,580	62.0	541,663	470,574	397,264	276,126
Toledo, Peoria & Western	Oct.	239	389,821	21	393,987	95,081	22,994	21,406	69,306	218,922	55.6	175,065	161,856	142,593	45,726
	10 mos.	239	2,488,565	65	2,523,127	386,571	175,103	192,493	637,077	1,519,157	60.2	1,003,970	865,498	710,849	342,700
Union Pacific System	Oct.	9,846	30,589,814	5,588,820	38,835,854	4,374,197	5,572,148	411,506	9,432,582	21,197,631	54.6	17,638,223	11,903,408	10,512,673	3,182,637
	10 mos.	9,859	222,577,236	34,647,970	276,434,724	37,955,219	47,795,752	4,236,929	74,893,652	176,269,033	63.8	100,165,691	50,896,706	42,046,081	19,779,534
Utah	Oct.	111	131,034	.....	131,095	14,801	40,956	494	31,017	91,794	70.0	39,301	19,174	21,499	4,237
	10 mos.	111	1,110,539	.....	1,111,247	162,919	350,163	4,908	283,391	844,331	76.0	266,916	147,254	145,528	55,505
Virginian	Oct.	659	2,308,431	7,655	2,411,568	189,483	415,451	23,966	404,006	1,080,567	44.8	1,331,001	511,001	595,120	892,951
	10 mos.	657	21,461,994	59,911	22,323,856	1,879,090	4,666,338	252,619	3,885,363	11,144,742	50.0	11,179,114	5,631,614	6,213,894	6,995,297
Wabash	Oct.	2,393	6,912,781	661,851	7,973,519	749,149	840,234	161,464	2,258,810	4,243,524	53.2	3,729,995	1,410,881	816,014	868,209
	10 mos.	2,395	56,019,948	4,669,166	64,098,273	6,722,619	7,934,011	1,606,194	20,504,710	38,785,258	60.5	25,313,015	12,109,694	7,389,625	8,164,566
Ann Arbor	Oct.	294	407,014	5,326	424,520	45,570	77,320	15,434	171,308	323,642	76.2	100,878	48,711	43,764	56,889
	10 mos.	294	4,088,656	40,353	4,255,365	415,737	797,978	150,993	1,727,207	3,225,321	75.8	1,030,044	536,989	407,649	558,618
Western Maryland	Oct.	853	2,768,810	19,673	2,935,868	330,919	566,830	41,800	722,568	1,734,359	59.1	1,201,509	763,509	789,559	576,774
	10 mos.	857	24,441,181	175,927	25,401,502	2,760,064	5,406,156	445,819	6,613,024	15,910,501	62.6	9,491,001	5,683,001	5,813,377	5,044,720
Western Pacific	Oct.	1,195	4,244,225	376,902	4,767,358	273,323	406,184	77,738	1,161,770	2,029,445	42.6	2,737,913	2,216,059	1,984,878	983,306
	10 mos.	1,195	28,058,843	1,806,091	30,688,796	2,842,071	3,855,921	757,670	9,471,191	17,749,920	57.8	12,938,876	10,372,499	8,907,399	3,815,901
Wheeling & Lake Erie	Oct.	507	2,184,612	2	2,298,677	241,456	356,753	39,694	612,295	1,299,451	56.5	999,226	535,486	692,820	342,961
	10 mos.	507	19,141,833	25	20,160,500	2,463,482	3,339,220	399,440	5,664,527	12,275,267	60.9	7,885,233	1,397,704	2,858,567	3,419,479

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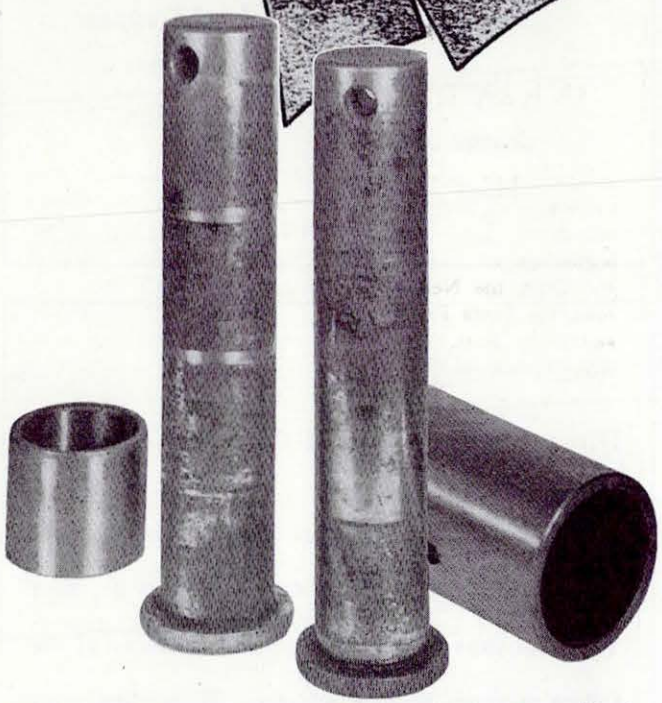

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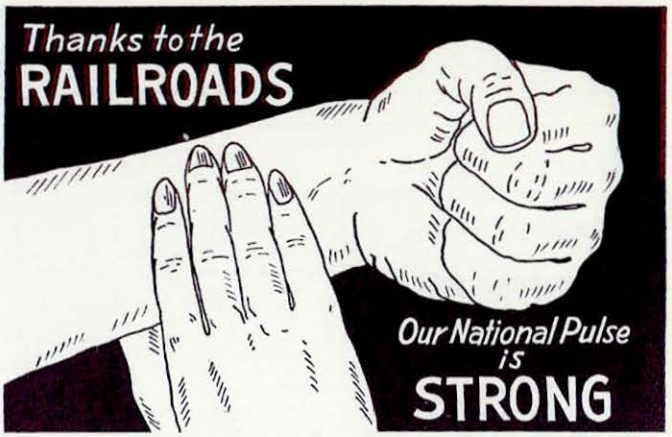

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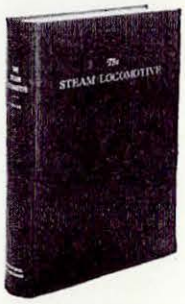

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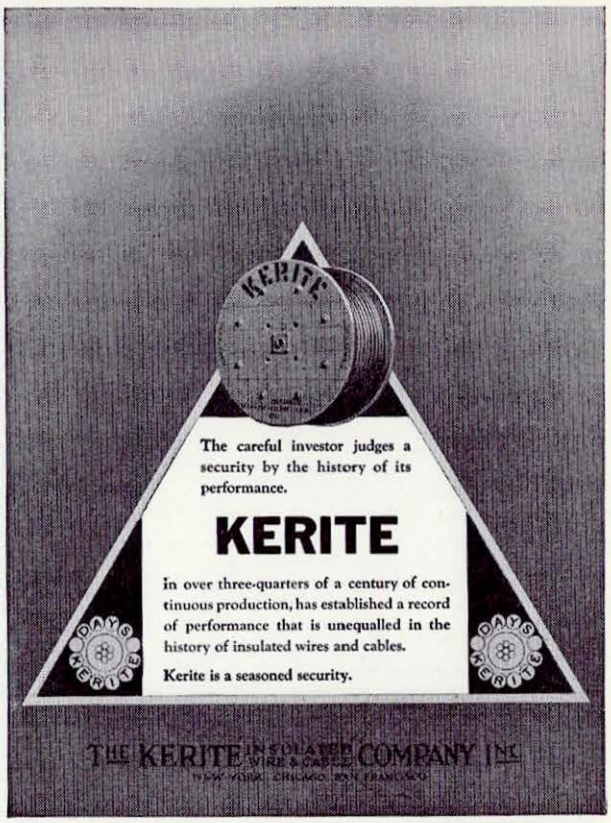
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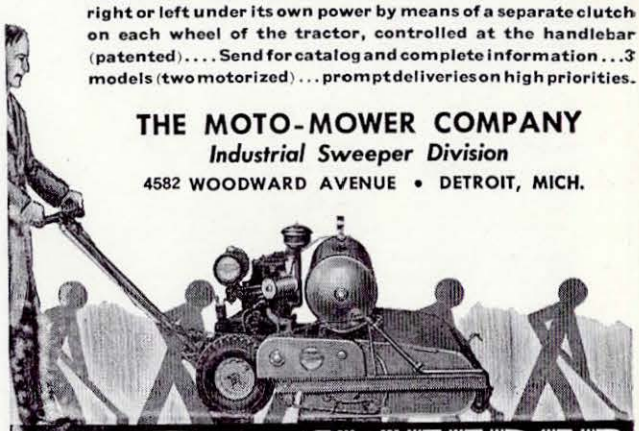

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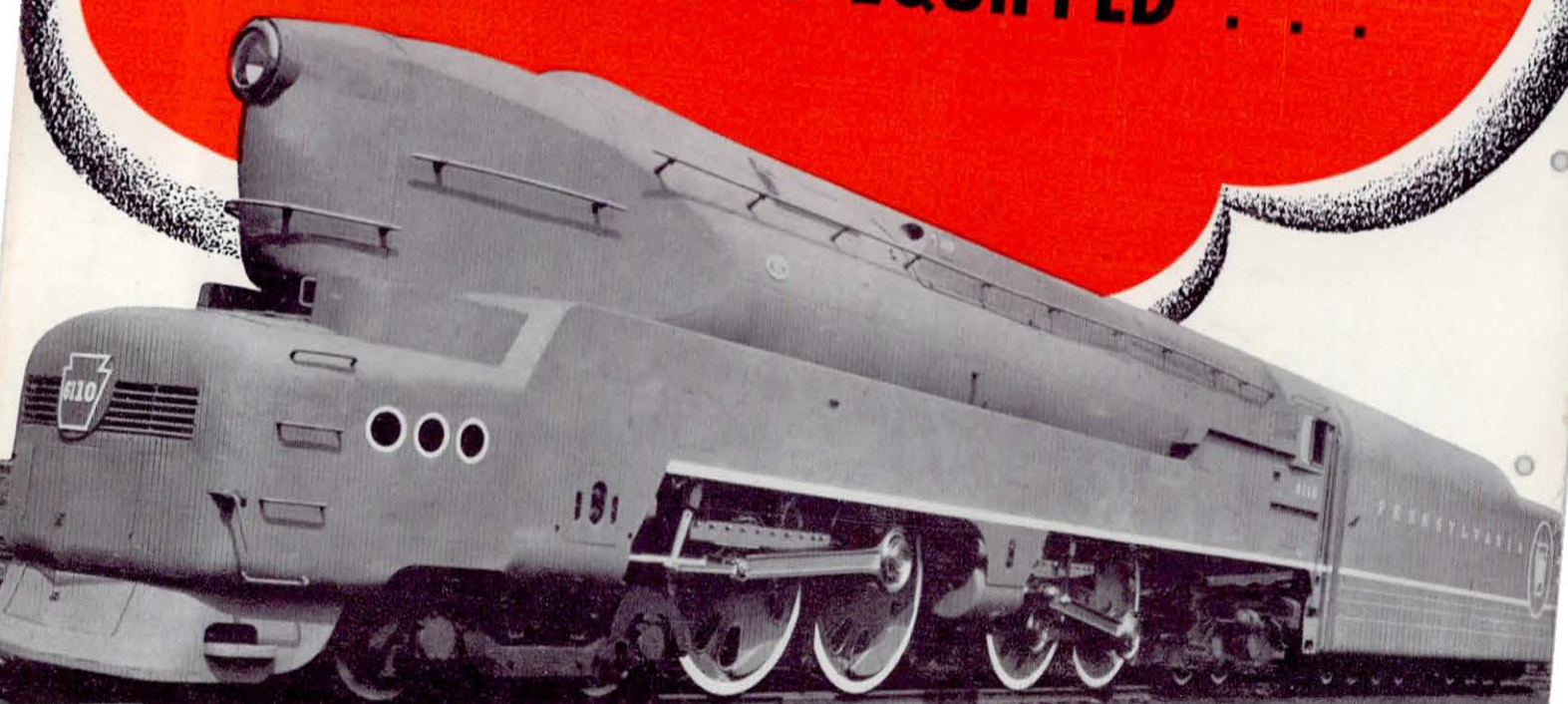

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